UNIVERSITY OF SCRANTON CATALOG

1966-1967

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BULLETIN

OF THE

UNIVERSITY OF SCRANTON

COLLEGE OF ARTS AND SCIENCES

1966-67

UNIVERSITY OF SCRANTON

Scranton, Pennsylvania 18510

VERY REVEREND ALOYSIUS C. GALVIN, S.J., *President*

Courses in the College of Arts and Sciences are restricted to male students. Courses in the Evening, Summer and Graduate Divisions are open to men and women students. Please consult the catalogs of the respective divisions for further information.

For information on admission to the College of Arts and Sciences, write or phone:

DIRECTOR OF ADMISSIONS

University of Scranton

Scranton, Pennsylvania 18510

Telephone: (717) 347-3321

Information and regulations printed in this catalog are subject to change. Due notice of the changes will be given on the University Bulletin Board.

ACCREDITATION

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Middle States Association of Colleges and Secondary Schools

Board of Regents of the University of the State of New York

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BULLETIN

OF THE

UNIVERSITY

OF

SCRANTON

COLLEGE OF ARTS AND SCIENCES

1966-67

Volume Fifty, Number 1 August 31, 1966

ACADEMIC CALENDAR 1966-1967

1966

SEPTEMBER

SUN	MON	TUE	WED	THU	FRI	SAT
•	•	•	•	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	•

OCTOBER

SUN	MON	TUE	WED	THU	FRI	SAT
•	•	•	•	•	•	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23/30	24/31	25	26	27	28	29

NOVEMBER

SUN	MON	TUE	WED	THU	FRI	SAT
•	•	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	•	•	•

DECEMBER

SUN	MON	TUE	WED	THU	FRI	SAT
•	•	•	•	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

1967

JANUARY

SUN	MON	TUE	WED	THU	FRI	SAT
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	•	•	•	•

FEBRUARY

SUN	MON	TUE	WED	THU	FRI	SAT
•	•	•	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	•	•	•	•

MARCH

SUN	MON	TUE	WED	THU	FRI	SAT
•	•	•	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	•

APRIL

SUN	MON	TUE	WED	THU	FRI	SAT
•	•	•	•	•	•	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23/30	24	25	26	27	28	29

MAY

SUN	MON	TUE	WED	THU	FRI	SAT
•	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	•	•	•

JUNE

SUN	MON	TUE	WED	THU	FRI	SAT
•	•	•	•	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	•

FALL SESSION 1966

September	15-16	Freshman Orientation
	19	Fall Session Begins
	23	Mass of Holy Spirit—Convocation
	26	Final Day for Late Registration or Change of Course
October	14-16	University Weekend
November	1	Feast of All Saints—Holy Day
	11	End of Quarter
	24-26	Thanksgiving Holidays
	27	Parents' Day
December	8	Feast of Immaculate Conception—Holy Day
	14	Christmas Holidays Begin (after last class)
January	3	Classes Resume
	20-27	Semester Examinations
	30- 3	Semester Vacation

SPRING SESSION 1967

February	6	Classes Resume
	13	Final Day for Late Registration or Change of Course
	22	Washington's Birthday—Holiday
March	22	Easter Holidays Begin (after last class)
	30	Classes Resume
April	7	End of Quarter
	21	13th Annual Military Mass in Honor of St. Ignatius of Loyola—Spring Convocation
May	4	Ascension Thursday—Holy Day
	19-26	Senior Examinations
	30	Memorial Day—Holiday
	26- 2	Semester Examinations
June	3	Baccalaureate Mass—Class Day Exercises
	4	Commencement

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HISTORICAL ORIGINS

The University of Scranton was founded as Saint Thomas College in 1888. Its University Charter was received in 1938 and in 1942 it became the twenty-fourth of the twenty-eight Jesuit colleges and universities.

In 1540 the Jesuits (Society of Jesus) became a religious order under the direction and guidance of Saint Ignatius of Loyola. Almost from this date, education became one of the chief concerns of this Society. In the United States, the Jesuit educational tradition began with the founding of Georgetown College in 1789. Today there are thirteen Jesuit colleges and fifteen Jesuit universities in the United States. The University of Scranton carries on the tradition of Jesuit education in Northeastern Pennsylvania.

Photo courtesy of Loyola High School, Towson, Maryland.

In planning for the student's educational future, the most important decision is to choose the college or university which is best suited to him. This bulletin is designed to help in this task.

The University is an urban, liberal arts college conducted by the Jesuit Fathers. It is located close to the business district in the City of Scranton, Pennsylvania. The city, the focal point of the federal highway system in northeastern United States, is less than three hours driving distance from New York and Philadelphia. Within easy travel distance are the beautiful Pocono Mountains and the Susquehanna River resorts with hundreds of streams, lakes and magnificent scenery.

This bulletin offers a cordial invitation to visit the campus and to talk with faculty members and administrators. Arrangements for your visit may be made at the Office of Admissions.

In this section

- **Campus and Buildings**
- **Objectives and Purposes**
- **Religious Training**
- **Counseling, Guidance and Placement**

Alumni Memorial Library

Opened in 1960, the Alumni Memorial Library is a striking presentation of advanced functional architectural planning. In bright, air-conditioned surroundings, students find ideal accommodations for concentrated study and research. The library features a music room with the most modern equipment for individual and group listening, seminar rooms for presentation and discussion of projects in specialized fields, and an audio-visual room for instruction in teaching techniques.

Loyola Hall of Science

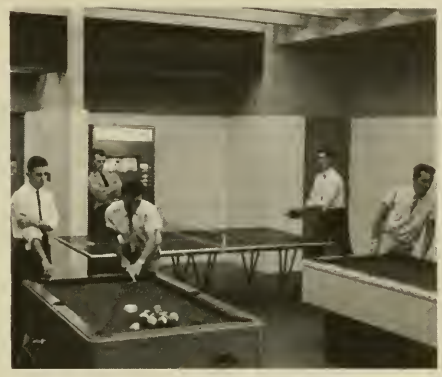
This modern science building, opened in 1957, provides the highly specialized equipment necessary for the study of engineering, physics, chemistry and biology.

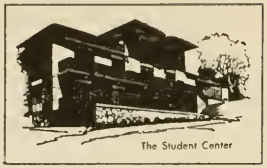
St. Thomas Hall

This new University building to match the University's other modern structures, containing classrooms, laboratories and administrative offices, was occupied in 1962.

Student Center

Opened in 1960, the Student Center has become the popular meeting place for all members of the University family. Auditorium and ballroom, cafeteria and snack bar, lounges and sun porch, rifle range and game room, bookstore and reading room provide for the leisure time needs of students and faculty.

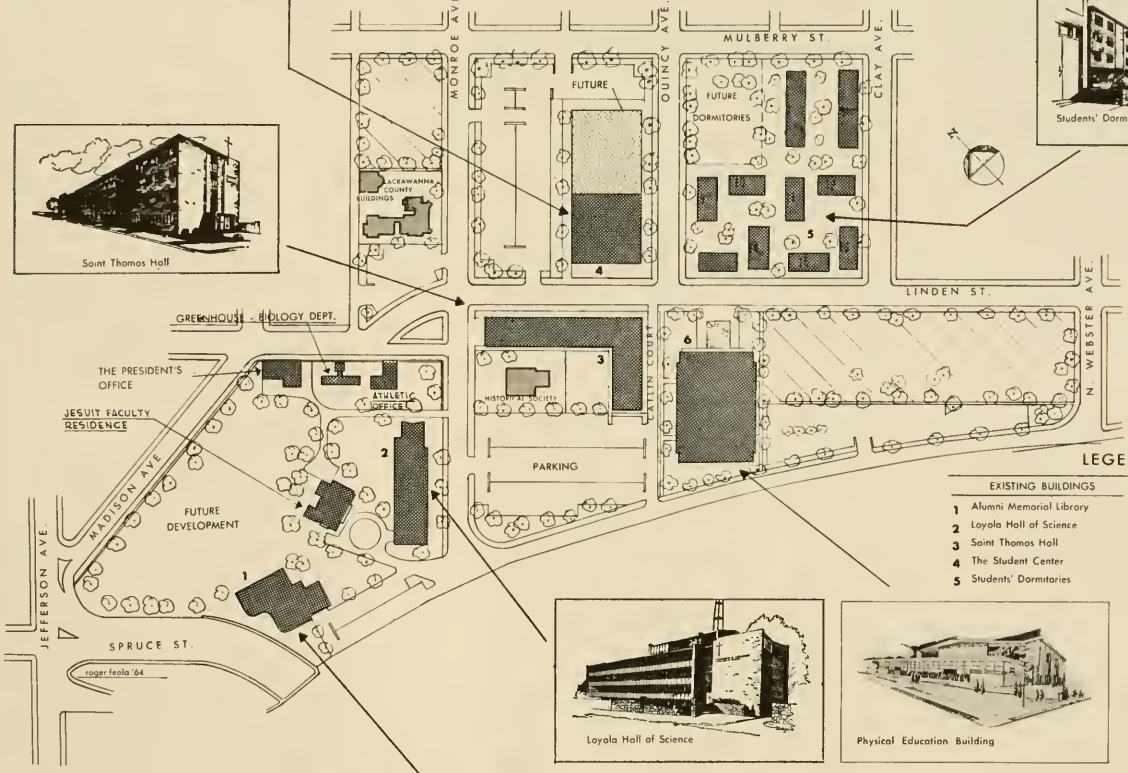




The Student Center

Students' Dormitories

Saint Thomas Hall



LEGEND

EXISTING BUILDINGS	BUILDINGS IN THE FUTURE DEVELOPMENT AREA
1 Alumni Memorial Library	6 Physical Education Building
2 Loyola Hall of Science	Faculty Housing
3 Saint Thomas Hall	Student Center Extension
4 The Student Center	Two New Dormitories
5 Students' Dormitories	

Loyola Hall of Science

Physical Education Building

7. Nevils
8. Driscoll
9. Fitch
10. McCourt
11. Dennis Edward
12. Hafey
13. Martin
14. Casey
15. Lynett
16. Hannan

Alumni Memorial Library

The University of Scranton

PLAN of the UNIVERSITY OF SCRANTON

OBJECTIVES AND PURPOSES

The University of Scranton, as one of the family of colleges and universities administered by the Society of Jesus throughout the world, shares with them their common education objectives.

> **To lead the student to understand himself and the world in which he lives; to enable him to fulfill his potentials and responsibilities as a person and as a member of human society, under God.**
>
> **Harmoniously to develop all his powers of soul and body, under the influence of Divine Grace, by methods of teaching which will form habits of correct and vigorous thinking and of courageous, effective and virtuous acting.**

To attain these ends, the University requires that its undergraduates complete studies in language, literature, history, mathematics, the natural sciences, and in scholastic philosophy and theology as a necessary cultural foundation.

The University employs the methods of the *Ratio Studiorum*, the Jesuit Code of Liberal Education, which was first adopted in 1599 after more than thirty years of cooperative experiment and study. This method provides for:

> **clear cut organization of successive objectives to be obtained by the students;**
>
> **frequent stimulation of the student to organize and synthesize the knowledge he has gained;**
>
> **the use of personal inquiry and critical discussion as an essential part of the teaching technique to promote both intellectual curiosity and mastery of subject matter;**
>
> **development of creative thinking and effective self expression in accordance with the ideals of the intellectual and moral order;**
>
> **personal association between teacher and student to assure proper adjustment and that growth which comes only from direct contact with the ideals and example of a mature scholar.**

RELIGIOUS TRAINING

If education is to perfect human nature and prepare the student for a fruitful life, intellectual training must be supplemented by complete training in religion and morality. The more highly trained a man is, the greater are his potentials for good or evil, and consequently, the more important the role of religion becomes to instruct the conscience and to strengthen the will in the ways of private, social and civic virtue.

One of the phases of this religious training at the University consists of formal instruction given during class periods as an integral part of the curriculum. Since religious truths form a body of doctrine that can be taught and studied as exactly and scientifically as other branches of human knowledge, the courses in religion are conducted as regular lecture courses with recitations and examinations. The courses are so distributed over the four years of college that the entire field of Christian dogma and morals is adequately surveyed.

In the admission of students to the University, however, no discrimination is made on the grounds of their religious belief. Non-Catholics are not obliged to take theology courses. Such students will substitute other courses in place of theology.

COUNSELING, GUIDANCE AND PLACEMENT

Counseling and guidance services are available for all students.

CHAPLAIN. A characteristic of Jesuit education is the Chaplain. He directs the spiritual activities of the University and its various religious organizations. He is, in a special sense, the student's friend and advisor in religious matters, in social duties and other personal concerns.

GUIDANCE. Staffed by professionally trained personnel, this department serves the students, the Chaplain, the faculty and the administration. It provides counseling service on educational, vocational and personal matters. Students are tested and counseled on their aptitude for college work, study habits, their correct placement in the curriculum, and their reading techniques.

PLACEMENT. Undergraduates and alumni are given every possible assistance in finding satisfactory employment when they register with the University Placement Bureau. Officers of large corporations, from time to time, especially during the Spring term, arrange through the Bureau to visit the University to interview seniors for positions with their organizations.

THE STUDENT AND THE UNIVERSITY

This section of the bulletin outlines procedures, requirements and responsibilities which will pertain to students throughout their four years at the University.

- **Admission**
- **Residence Halls**
- **Student Expenses**
- **Financial Assistance**
- **General Regulations**
- **University Organizations**

ADMISSION

The Board of Admissions of the University of Scranton will make the final decision on applications for admission. In reaching this decision, the board will consider the following:

- The high school record — both the student's relative standing in class and the program followed.
- The scores on the College Entrance Examination Tests.
- Recommendations of teachers, guidance counselors, and the principal.
- The student's character, personality, and leadership potential.

Steps in Making Application. Requests for an application form and all correspondence dealing with admission to the University should be directed to: THE DEAN OF ADMISSIONS, UNIVERSITY OF SCRANTON, SCRANTON, PENNSYLVANIA, 18510

A fee of $15.00 is chargeable on application.

- Students should apply at the completion of their junior year in high school or at the completion of the first semester of their senior year. July 1 is the final date on which applications for Fall term admission will be accepted.
- Complete the first two pages of the application form and give the entire form to the registrar or principal of the high school who will record the high school grades and return the form with his recommendations to the University.
- In December or January of senior year, take the Scholastic Aptitude Tests. The Achievement Tests in English, Mathematics Level I[1], and the Modern Foreign Language studied in high school are to be taken in January or March of Senior year. The Scholastic Aptitude Tests and the Achievement Tests are required of all applicants. The Aptitude Tests are used for admission and the Achievement Tests are used for placement. Arrange for these tests one month ahead of the testing date by writing to: *The College Entrance Examination Board, Box 592, Princeton, New Jersey.*

[1] Applicants for science or engineering programs or those with Advanced Mathematics Courses will take Mathematics Test, Level II.

- A non-refundable class reservation fee of $25.00 is required of all accepted applicants. In addition, accepted resident freshmen will make a non-refundable room deposit of $50.00 upon notice from the Dean of Admission.
- Make use of the pre-college counseling offered by the Dean of Admissions after your application has been submitted.
- Final marks for senior year and certification of graduation are necessary. Arrange to have them sent to the Dean of Admissions on the completion of senior year in high school.

Required High School Preparation. Students desiring to enroll in any of several undergraduate programs offered by the University must have completed a total of sixteen or more high school units covering grades 9-12. The term "unit" means a high school course of from four to five hours weekly throughout an academic year of thirty-six weeks duration. Unit requirements and preferred distribution of secondary courses are given in the following table:

HIGH SCHOOL UNITS	COLLEGE PROGRAM CHOICE					
	Arts		Science or Engineering		Business Education or Social Science	
	Req.	Pref.	Req.	Pref.	Req.	Pref.
English	4	4	4	4	4	4
History & Social Science	2	3	2	3	2	3
Classical Languages	0	2+	0	2+	0	2+
Modern Foreign Language	2	2+	2	2+	2	2+
College Preparatory Mathematics	3	4.	3	4	3	4
Science	1	2+	1	3+	1	2+
Electives	4		4		4	
TOTAL	16+		16+		16+	

- Applicants without secondary school credit in modern languages may be accepted if they present sixteen (16) acceptable units. However, they must register for the elementary course in a modern foreign language and continue their study of the language in Summer school. A single year of a language in high school will not be counted as a unit to satisfy the requirements for admission.
- German is the preferred language in the sciences and mathematics. Graduate schools normally require either French or German or both.

- Mathematics includes elementary, intermediate and advanced algebra, plane and solid geometry, trigonometry, analysis. Related Mathematics, Consumer Mathematics, General Mathematics will not be recognized as fulfilling admission requirements. Applicants for science and engineering programs must include trigonometry and have maintained an 85% average in each mathematics course.
- Science includes biology, chemistry and physics but not general science. High school work in chemistry is preferred. Engineering applicants are urged to include physics in their high school preparation.
- Electives are to be from academic subject matter courses and may include any of the following:

Ancient History	1	Social Science	1
Medieval History	1	Greek	2 to 3
Modern History	1	Modern Foreign Language	2 to 4
Civics	1	College Preparatory Mathematics	2 to 4
Economics	1	Science	2 to 4
Problems of Democracy	1		

REQUIRED OF ALL APPLICANTS

What	*Apply to Whom*	*When*
Application Form	Dean of Admissions	End of junior year or beginning of senior year
High School Record	Principal (to be sent to the Dean of Admissions)	End of junior year or beginning of senior year
Scholastic Aptitude Test	College Entrance Examination Board, Box 592, Princeton, New Jersey	November or December of senior year
Achievement Tests in: English Intermediate Mathematics Modern Foreign Language	College Entrance Examination Board, Box 592, Princeton, New Jersey	December or February of senior year

Arrange to have all test scores sent to the Director of Admissions, University of Scranton.

ADVANCED PLACEMENT AND EARLY ADMISSION

ADVANCED PLACEMENT. Applicants who have taken college level courses during their secondary school career may be given advanced placement or advanced placement and credit in those subjects at the discretion of the Board of Admissions. Students who have been accepted for admission and desire to apply for such placement must take the Advanced Placement Examination offered by the College Entrance Examination Board, Princeton, New Jersey.

EARLY ADMISSION. Outstanding secondary school students who demonstrate sufficient maturity may be admitted to the University after the completion of the junior year of high school. Such admission will be made at the discretion of the Board of Admissions. Students who are so admitted will be granted the high school equivalent diploma by the Department of Public Instruction, Harrisburg, Pennsylvania, upon completion of their freshman year of college. Such applicants should present a minimum of fifteen (15) acceptable high school units on application.

TRANSFER STUDENTS. At the discretion of the Board of Admissions, candidates transferring from another accredited college or junior college may be admitted provided: (1) the courses taken conform to the requirements of the University of Scranton; (2) the academic average of the candidate is "C plus" (2.5) or better; (3) certification of honorable dismissal is presented from the previous college. No candidate will be admitted to a standing higher than the completion of sophomore year. No credit will be given to courses with grades less than "C". Students entering from other institutions shall be required to make up curricular subjects prescribed in the course which they are to follow at the University of Scranton.

In case the character of a student's work in any subject is such as to create doubt as to the quality of that which preceded, the University explicitly reserves the right to revoke any and all credit assigned on credentials and to exact examination in the same subject.

RESIDENCE HALLS

Residence Halls for out-of-town students are provided on campus. All such students are obliged to live in these residences. An exception to this requirement will be made in the case of those out-of-town students who will be living with relatives in Scranton while attending the University. Permission to live outside the residence halls must be obtained from the Dean of Men before the beginning of the school year.

The Residence Hall fee is $405 per semester. This is to be paid in advance either by the semester or for the full year. This fee provides for room, breakfast and dinner in the University cafeteria for the full week and nursing service for emergency and short-term care in the infirmary.

All inquiries about residence halls should be directed to the Dean of Men.

Upperclassmen desiring to reserve space in one of the residence halls must make a room reservation deposit of $50.00 before May 1. This deposit is not refundable but is applicable to room and board.

Fees listed for residence facilities do not cover the times of calendar vacations. Students are expected to vacate their rooms at these times.

STUDENT EXPENSES

Tuition per credit	$ 32.00
Special Service Fees	
Late Registration Fee	15.00
Change of Schedule after Registration	5.00
Condition Examination (per course)	5.00
Ordinary Fees	
University Fee, per semester	30.00
(The University Fee is used for general University purposes, including the amortization of Student Center indebtedness, student personnel services, athletics and other activities.)	
Science and Engineering Laboratory, per semester	20.00
Science Demonstration Fee, per semester	10.00
Business Laboratory, per semester	10.00
Statistics Laboratory, per semester	10.00
Computer Use Fee, per semester	15.00
Education and Psychology Laboratory, per semester	20.00
Teacher Training Fee (Educ. 103, 105, 128)	50.00
Language Laboratory, per semester	10.00
Breakage Fees	actual
I. D. Photo Fee	2.00
For Seniors Only	
Graduation Fee	45.00
Retreat Fee (Catholic students only)	20.00

Tuition and fees are payable in advance on registration. Registration is to be completed *by mail* by August 15 for the fall semester and by January 13 for the spring semester. There will be a $5.00 service charge made for students who register in person instead of by mail. After the dates of August 15 or January 13, respectively, the late registration fee of $15.00 becomes effective. Without exception, the Laboratory Fee must be paid in all courses having a Laboratory requirement.

The normal credit load for a student is indicated for the course and year in the curriculum tables on pages 39-51. The credit loads in excess of this number will rarely be permitted and will require the written permission of the Dean.

Students matriculated in the College of Arts and Sciences who desire to take courses offered in the Evening College must secure written permission from the Dean.

MONTHLY PAYMENTS. Parents who prefer to pay tuition, board and room, and other fees in equal monthly installments should consult their local bank. Numerous banks now provide tuition plan services. The University does not accept installment payments directly.

REFUNDS. When a student leaves the University without completing the semester, he may not demand a refund as a matter of right. If, however, his withdrawal is authorized for a good cause and he has honorable dismissal, he may request in writing a refund of tuition, board and room fees. Ordinary and special service fees are not refundable. The schedule of refunds is listed below.

PERIOD OF ATTENDANCE	REFUND
First Semester	
To September 24	80%
To October 1	60%
To October 8	40%
To October 15	20%
Beyond October 15	no refund
Second Semester	
To February 11	80%
To February 18	60%
To February 25	40%
To March 4	20%
Beyond March 4	no refund

FINANCIAL ASSISTANCE

The University desires to help as many qualified students as possible complete a college education. Since financial difficulties are often obstacles, the financial assistance program at the University includes competitive and non-competitive grants as well as National Defense Student Loans, Educational Opportunity Grants and work opportunities through the federal College Work-Study Program. For the student's convenience, a detailed outline of the program follows:

PRESIDENTIAL SCHOLARSHIP PROGRAM

No. of Grants	*Value per Year*	*Term of Grants*	*Geographic Restrictions*
8	$1,000-$1,020	4 years	none

These full tuition scholarships are awarded on basis of

- Excellence of Entrance Examination Scores
- Excellence of High School Record
- Principal's Recommendation

Student must maintain a B average to keep scholarship.

Deadline: January 1

U. S. ARMY ROTC SCHOLARSHIP PROGRAM

No. of Grants	*Value per Year*	*Terms of Grants*	*Geographic Restrictions*
variable	$900	4 years	none

- Excellence of High School Record

Deadline: March 1

3 or more	$900	Juniors and Seniors	none

- Selected from Advanced course applicants with outstanding officer potential.

NON-COMPETITIVE SCHOLARSHIPS

Type	*No. of Grants*	*Value per Year*	*Term of Grants*	*Geographic Restrictions*
Martha Fitch Fund	35	$200-250	4 years	none
UNICO Club Fund	1	$1,000	4 years	Lackawanna Co.
Robert I. Edelsohn Memorial Scholarship	2	$500	4 years	none
Alumni Grants	6	$200-250	1 year	none

The above grants are awarded on the basis of:

- Proven financial need
- Excellence of High School Record
- Excellence of Entrance Examination Scores
- Recommendation of Principal

Student must maintain a B average to keep the scholarship.

Type	*No. of Grants*	*Value per Year*	*Term of Grants*	*Geographic Restrictions*
PURPLE CLUB	40	$100-250	4 years	Lackawanna County and radius of 25 miles around Scranton
NATIONAL DEFENSE STUDENT LOANS	variable	up to $1000, depending on need	variable	none
EDUCATIONAL OPPORTUNITY GRANTS	variable	$200-800	4 years	none

OTHER NON-COMPETITIVE GRANTS

The above grants are awarded on the basis of:

- Proven financial need
- A good high school record
- A satisfactory performance on entrance examination
- Recommendation of principal

Student must maintain a C average to keep scholarship.

Important Steps in Making Application for Financial Aid:

Apply for Admission to Dean of Admissions, University of Scranton, Scranton, Pennsylvania 18510.

Apply for Financial Assistance—Office of Financial Assistance.

Complete the Parents' Confidential Statement

Obtain this form from *College Scholarship Service*, Box 176, Princeton, New Jersey. The University code is 2929.

COMPLETE FINANCIAL AID FORM to be returned to University by February 15.

Type	*Source*	*Apply to*
STUDENT TEACHER PROGRAM GRANTS	Scholarships awarded by the University of Scranton through cooperating school districts	Superintendent of school district
PENNSYLVANIA POWER AND LIGHT SCHOLARSHIPS	Grants made by PPL to students to attend colleges in area served by PPL	Principal of high school
STATE REHABILITATION GRANTS	Grants made under the State Rehabilitation Program	Local State Rehabilitation office
UNITED STUDENT AID FUND PA. HIGHER EDUCATION ASSISTANCE AGENCY	Loans to upperclassmen	Director Financial Aid or local bank

OTHER SOURCES OF FINANCIAL ASSISTANCE

The University provides over seventy campus jobs in various departments each year. Application is made through the University Office of Financial Assistance. This office will also assist eligible students to secure employment both on and off campus through the federal College Work-Study Program.

WORK OPPORTUNITIES

GENERAL REGULATIONS

The educational philosophy of the College includes as one of its most important features the formation of character. For this reason, discipline, while considerate and largely a matter of student morale, is firm, especially when the reputation of the student body and the College is concerned.

The College reserves the right to dismiss at any time, and without making public the reason, a student who conducts himself contrary to the standards of the College. These standards are given clear expression in the student handbook. Grave, public violations of ecclesiastical law, particularly those relating to marriage and the like, are also considered serious transgressions against the standards of the College.

Matters of discipline are supervised by the Dean of Men acting, in serious cases, after consultation with the Faculty Committee on Discipline. In the event of a serious breach of discipline, a student is given a full hearing. Final disposition of his case is made by the President of the College after receiving the recommendation of this Committee.

ABSENCE AND LATENESS. Regular attendance is one of the most important obligations of the student. Absence beyond twelve percent of classes or laboratories in any course or absence totaling more than double the number of credits in a given course will cause the student to be withdrawn from the course or courses and a failure will be recorded in each case. This allowance is considered sufficient to cover all extraordinary causes such as illness, death in the family and the like.

Students will not be admitted to class after the bell signaling the beginning of the class.

PROPER ATTIRE. Dress proper to the occasion is a hallmark of a gentleman and at the same time an important factor in his formation. At the University of Scranton, proper attire includes

GRADING SYSTEM. Final grades are determined by the instructor on the basis of the student's homework, recitations, tests and final comprehensive examination. The standing of students at the quarter is to be ascertained from the instructor. Deficiency warnings will be mailed at the quarter to students doing unsatisfactory work.

All students are required to pass a comprehensive examination in each subject at the close of each semester.

The system of grading is based on the letters A, B, C, D, E and F. These letters are evaluated according to the following scale:

A	indicates, not only high achievement, but also a high degree of intellectual initative and creative work	4 quality points for each credit hour
B	indicates attainment above the average	3 quality points for each credit hour
C	indicates medium or average attainment	2 quality points for each credit hour
D	indicates attainment below average but passing	1 quality point for each credit hour
E	Conditioned Failure. This grade is assigned to a student who, in the opinion of and at the discretion of the instructor and after having completed all semester exercises, narrowly fails to achieve a passing grade; or to the student who, after achieving a passing average in all other semester exercises narrowly fails to achieve a passing grade in the final examination. It is a temporary grade, and, after a single condition examination, will be replaced on the record by a final grade indicating that the student has passed satisfactorily or that his failure is complete. The highest mark on the condition examination is D. However, the semester grade may be higher. The condition grade must be removed within two weeks from the end of the semester.	
F	Complete Failure, with no privilege of re-examination and with the obligation of repeating the course if permitted to remain in attendance.	
W	Withdrew before judgment could be formed.	
F	Withdrew failing.	
I	Course requirements incomplete. The incomplete grade must be removed by completion of the remaining requirements by the end of the semester after which it has been incurred. The explicit permission of the Dean is required to grant such a grade.	

QUALITY OF WORK. A grade average of C or a quality point index of 2.0 is required for graduation.

The quality point index of a student is determined by dividing the total number of quality points earned by the total number of credits attempted.

A semester hour of credit represents one hour a week for one semester except when a class period is conducted in the style of a conference or seminar. Two or more hours of science laboratory work are counted as the equivalent of one lecture period.

DEFICIENCIES. No student will be classified as a senior who has not removed all deficiencies or who has not earned the necessary number of quality points. Any member of the senior class who incurs one failure or two conditions shall cease to be a candidate for a degree at the next commencement.

A student who has accumulated three failures at the end of a semester shall be dismissed.

PROBATION. Probation is a warning that a student is in danger of dismissal from the University for academic reasons.

HONOR STUDENTS. To be eligible for honors a student must carry the full program of his class. All semester hours in which a student receives a grade are counted in the determination of honors. In order to be listed as an honor student a grade of B or higher must be earned in each subject. Names of honor students are placed on the Dean's List, which is published each semester.

RECOMMENDATIONS AND HONORS. Favorable recommendations for the purpose of advanced studies will not be issued to any student who does not maintain a quality point average of 2.5 or better in his major field.

Honors at graduation are conferred under the following regulations:

a. To be eligible students must have completed a minimum of 100 hours of work at the University of Scranton.

b. Honor Averages:

Summa Cum Laude	A quality point average in all subjects of 4.0
Magna Cum Laude	A quality point average in all subjects of 3.5
Cum Laude	A quality point average in all subjects of 3.0

WITHDRAWAL FROM THE UNIVERSITY. A student who withdraws voluntarily from the University of Scranton will be granted an honorable dismissal under the following conditions:

1. He must not already be liable to dismissal for deficiencies, excessive absence or misconduct.
2. He must discuss his intention with the Dean and, if so instructed, must submit the request for withdrawal in writing from his parents or guardian.
3. He must have settled all financial accounts with the University. Withdrawal will be effective as of the date on which the notice is received from the parent or guardian.

UNIVERSITY ORGANIZATIONS

Organizations and activities are an essential part of student life. They not only complete the work begun in the classroom, but provide opportunities for initiative, leadership, self-expression, and the social graces. Most important of all, they produce that breadth of outlook which comes from close associations with men dedicated to intellectual and cultural pursuits.

ELIGIOUS ORGANIZATIONS

The League of the Sacred Heart
The Swordsmen
(Sodality of Our Lady)
The Knights of Columbus
(University Council #4032)

LPHA SIGMA NU
(The Honor Society)

DEPARTMENTAL ACTIVITIES

Art Club
Aviation Club
Biology
Business
Chemistry
Deutscher Kreis
Economics
Society for the Advancement of Management
Le Cercle Francais
Social Science
Greek Club
Loyolans (Spanish)
Student Education Association
Royal Rifles
Philosophy Club
Physics
Political Science
Royals Historical Society

ATHLETICS

Basketball
Baseball
Tennis
Golf
Rifle Team
Intramurals
Cross Country

NO SMOKING

UNIVERSITY ACTIVITIES

Players
Singers
Band
Student Council
Debate
Radio Station

Publications
Aquinas
Esprit
Windhover
Bioscript
Physics Journal
Chemiscope
Journal of Natural Sciences

PROGRAMS OF STUDY

The College of Arts and Sciences of the University of Scranton offers six basic programs for the undergraduate student, leading to the A.B. or B.S. degrees. A variety of fields of concentration within each enables the undergraduate student to specialize in one or more areas of study.

All freshmen pursue the same basic studies with the exception of one course peculiar to the curriculum chosen. This provides flexibility, enabling the freshman student to change from one curriculum to another with the least loss of credit.

At the beginning of junior year and in the case of the sciences and accounting at the beginning of sophomore year, the student must choose his field of concentration. Students preparing for law school are urged to concentrate in history, political science, economics or accounting.

The following pages present the programs available at the University of Scranton:

- **Programs in the Liberal Arts**
- **Programs in the Social Sciences**
- **Programs in the Natural Sciences**
- **Program in Engineering**
- **Programs in Business Administration**
- **Programs in Teacher Training**
- **The Honors Program**

DEGREE PROGRAMS IN THE LIBERAL ARTS

Candidates for the Bachelor of Arts Degree may select a program emphasizing the classical tradition of Greece and Rome or one characterized by a more intense study of a modern foreign language. Majors are available in classical languages, English, modern foreign languages, history, philosophy, political science, economics, mathematics, psychology and sociology.

BACHELOR OF ARTS

ajors in Classical nguages, English, odern Language, Mathematics[1], listory, Political ence, Economics[2], Sociology[2] Psychology[2] Philosophy

Department and No.	*Descriptive Title of Course*	*Credits Fall*	*Spring*
	Freshman		
English 5-6	College Composition and Rhetoric	3	3
History 3-4	History of Modern Europe	3	3
Theology 3	The Christian Revelation	3	
Language 23-24	Intermediate Language	3	3
Mathematics 7-8 or[3]	Fundamentals of Mathematics or	3	3
Mathematics 13-14[3]	Freshman Mathematics—Introduction to Analysis	4	4
Military Science 13	First Year Basic, General Military Science		3
		15-16	15-16
	Sophomore		
English 21-22	Poetry and Dramatic Literature	3	3
History 1-2	History of the United States	3	3
Philosophy 21-22	Philosophy of Being	3	3
Military Science 23	Second Year Basic, General Military Science		3
Language	Advanced Language Elective	3	3
English 131-132[3]	Masterpieces of World Literature	3	3
Theology 23	The Whole Christ	3	
		18	18
	Junior[4]		
Philosophy 105-108	Philosophy of Man	3	3
Electives	Elective Courses	9	9
Biology 3-4	General Biological Science	3	3
		15	15
	Senior		
Philosophy 110-111	Philosophy of Human Conduct	3	3
Theology 103-113	The Christian Destiny—The Christian Worship	3	3
Electives[3]	Elective Courses	9	9
		15	15

[1] Students desiring to major in mathematics will take Mathematics 21-22 in sophomore year in place of History 1-2. History 1-2 will be taken by mathematics majors in junior year in place of one of their major elective courses.

[2] Students intending to major in economics, sociology or psychology will substitute the introductory course in these subjects for History 1-2 in sophomore year.

[3] Students desiring to take a second language may substitute the language for (1) the freshman mathematics requirement, for (2) English 131-132, and for (3) an elective course.

[4] English 3, *Oral Communication*, will be required of all juniors unless the English Department judges the student to be sufficiently proficient to be excused.

DEGREE PROGRAMS IN THE SOCIAL SCIENCES

Candidates for the Bachelor of Science in Social Science receive a broad training in the various social sciences and may concentrate in history, political science, economics, psychology and sociology.

Department and No.	*Descriptive Title of Course*	*Credits Fall*	*Spring*
	Freshman		
English 5-6	College Composition and Rhetoric	3	3
Mathematics 7-8 or	Fundamentals of Mathematics or	3	3
Mathematics 13-14	Freshman Mathematics—Introduction to Analysis	4	4
Language 23-24	Intermediate Language	3	3
History 3-4	History of Modern Europe	3	3
Theology 3	The Christian Revelation	3	
Military Science 13	First Year Basic, General Military Science		3
		15-16	15-16
	Sophomore		
English 21-22	Poetry and Dramatic Literature	3	3
Philosophy 21-22	Philosophy of Being	3	3
History 1-2	History of the United States[2]	3	3
Economics 23-24	Principles of Economics	3	3
Sociology 21-22	Basic Sociology—Social Problems	3	3
Military Science 23	Second Year Basic, General Military Science		3
Theology 23	The Whole Christ	3	
		18	18
	Junior[3]		
Philosophy 105-108	Philosophy of Man	3	3
Biology 3-4	General Biological Science	3	3
Electives	Elective Courses	9	9
		15	15
	Senior		
Philosophy 110-111	Philosophy of Human Conduct	3	3
Theology 103-113	The Christian Destiny—The Christian Worship	3	3
Electives	Elective Courses	9	9
		15	15

BACHELOR OF SCIENCE

Social Science Curriculum

Majors in History, Political Science, Sociology, Economics[1], Psychology

[1] Economics majors will take Business 1-2 in junior year together with six elective credits each semester.

[2] Students intending to major in psychology will substitute the introductory course in psychology for History 1-2 in sophomore year.

[3] English 3, *Oral Communication*, will be required of all juniors unless the English Department judges the student to be sufficiently proficient to be excused.

DEGREE PROGRAMS IN THE NATURAL SCIENCES

The degree programs in the natural sciences and mathematics are designed to give the student a solid foundation in scientific method and provide the courses necessary for the mastery of one or other of the sciences or mathematics.

Majors are available in biology, chemistry, physics, electronics or mathematics.

BACHELOR OF SCIENCE
Major in Biology

Department and No.	*Descriptive Title of Course*	*Credits Fall*	*Spring*
	Freshman		
English 5-6	College Composition and Rhetoric	3	3
Mathematics 13-14	Freshman Mathematics—Introduction to Analysis	4	4
Language 23-24	Intermediate Language	3	3
Theology 3	The Christian Revelation	3	
Military Science 13	First Year Basic, General Military Science		3
Chemistry 11-12	General and Analytical Chemistry	4	4
		17	17
	Sophomore		
English 21-22	Poetry and Dramatic Literature	3	3
Biology 1-2	General Biology	4	4
Philosophy 21-22	Philosophy of Being	3	3
Chemistry 101-102	Organic Chemistry I-II	4	4
Military Science 23	Second Year Basic, General Military Science	3	
Theology 23	The Whole Christ		3
		17	17
	Junior[1]		
Physics 11-12	Elements of Physics	4	4
Philosophy 105-108	Philosophy of Man	3	3
Chemistry 120	Physical Chemistry Fundamentals	4	
Biology 21-22	Comparative Vertebrate Anatomy	4	4
Sociology 22	Social Problems		3
		15	14
	Senior		
History 1-2	History of the United States	3	3
Philosophy 110-111	Philosophy of Human Conduct	3	3
Theology 103-113	The Christian Destiny—The Christian Worship	3	3
Biology 105-103	Histology—Embryology	4	4
Biology Electives		4	4
		17	17

[1] English 3, *Oral Communication*, will be required of all juniors unless the English Department judges the student to be sufficiently proficient to be excused.

BACHELOR OF SCIENCE
Major in Chemistry

Department and No.	*Descriptive Title of Course*	*Credits Fall*	*Spring*
	Freshman		
English 5-6	College Composition and Rhetoric	3	3
Mathematics 13-14	Freshman Mathematics—Introduction to Analysis	4	4
Theology 3	The Christian Revelation	3	
Language 23-24	Intermediate Language	3	3
Military Science 13	First Year Basic, General Military Science		3
Chemistry 11-12	General and Analytical Chemistry	4	4
		17	17
	Sophomore		
Chemistry 101-102	Organic Chemistry I-II	4	4
Philosophy 21-22	Philosophy of Being	3	3
Mathematics 21-22	Analysis	4	4
Military Science 23	Second Year Basic, General Military Science	3	
Physics 11-12	Elements of Physics	4	4
Theology 23	The Whole Christ		3
		18	18
	Junior[1]		
Philosophy 105-108	Philosophy of Man	3	3
Chemistry 103-125	Organic Chemistry III—Instrumental Analysis	4	4
Chemistry 123-124	Physical Chemistry I-II	4	4
English 21-22	Poetry and Dramatic Literature	3	3
Chemistry 127-128	Chemical Literature—Seminar	1	1
		15	15
	Senior		
History 1-2	History of the United States	3	3
Philosophy 110-111	Philosophy of Human Conduct	3	3
Theology 103-113	The Christian Destiny—The Christian Worship	3	3
Electives	Electives (*including chemistry*)	6	6
		15	15

BACHELOR OF SCIENCE
Major in Mathematics

	Freshman		
English 5-6	College Composition and Rhetoric	3	3
Mathematics 14-21	Introduction to Analysis—Analysis	4	4
Language 23-24	Intermediate Language	3	3
Theology 3	The Christian Revelation	3	
Military Science 13	First Year Basic, General Military Science		3
History 3-4	History of Modern Europe	3	3
		16	16

[1] English 3, *Oral Communication*, will be required of all juniors unless the English Department judges the student to be sufficiently proficient to be excused.

Department and No.	Descriptive Title of Course	Credits Fall	Credits Spring
	Sophomore		
English 21-22	Poetry and Dramatic Literature	3	3
Physics 11-12	Elements of Physics	4	4
Mathematics 22-101	Analysis—Differential Equations	4	4
Philosophy 21-22	Philosophy of Being	3	3
Military Science 23	Second Year Basic, General Military Science	3	
Theology 23	The Whole Christ		3
		17	17
	Junior[1]		
Philosophy 105-108	Philosophy of Man	3	3
Physics 21-24	Elements of Modern Physics—Circuit Analysis	4	4
Mathematics	Mathematics Electives	6	6
History 1-2	History of United States	3	3
		16	16
	Senior		
Philosophy 110-111	Philosophy of Human Conduct	3	3
Theology 103-113	The Christian Destiny—The Christian Worship	3	3
Mathematics	Mathematics Electives	6	6
Electives	Electives	3	3
		15	15

BACHELOR OF SCIENCE
Major in Physics

	Freshman		
English 5-6	College Composition and Rhetoric	3	3
Mathematics 14-21	Introduction to Analysis—Analysis	4	4
Physics 11-12	Elements of Physics	4	4
Language 23-24	Intermediate Language	3	3
Theology 3	The Christian Revelation	3	
Military Science 13	First Year Basic, General Military Science		3
		17	17
	Sophomore		
English 21-22	Poetry and Dramatic Literature	3	3
Physics 21-22	Elements of Modern Physics—Thermodynamics	4	3
Mathematics 22-101	Analysis—Differential Equations	4	4
Philosophy 101-104	Philosophy of Being	3	3
Military Science 23	Second Year Basic, General Military Science	3	
Theology 23	The Whole Christ		3
		17	16
	Junior[1]		
Chemistry 11-12	General and Analytical Chemistry	4	4
Physics 104-105	Electricity and Magnetism I-II	4	4
Mathematics 106-107	Advanced Calculus	3	3
Philosophy 105-108	Philosophy of Man	3	3
		14	14

[1] English 3, *Oral Communication*, will be required of all juniors unless the English Department

Department and No.	Descriptive Title of Course	Credits Fall	Credits Spring
	Senior		
Physics 111-103	Nuclear Physics—Physical Optics and Waves	3	4
Physics 114-115	Advanced Physics Laboratory	1	1
Physics 102-123 or	Mechanics—Advanced Mechanics	3	3 or
Mathematics 102	Vector Analysis		3
History 1-2	United States History	3	3
Philosophy 110-111	Philosophy of Human Conduct	3	3
Theology 103-113	The Christian Destiny, The Christian Worship	3	3
		16	17

BACHELOR OF SCIENCE

Major in Electronics

	Freshman		
English 5-6	College Composition and Rhetoric	3	3
Mathematics 14-21	Introduction to Analysis—Analysis	4	4
Physics 11-12	Elements of Physics	4	4
Language 23-24	Intermediate Language	3	3
Theology 3	The Christian Revelation	3	
Military Science 13	First Year Basic, General Military Science		3
		17	17
	Sophomore		
English 21-22	Poetry and Dramatic Literature	3	3
Physics 21-24	Elements of Physics—Circuit Analysis	4	4
Mathematics 22-101	Analysis—Differential Equations	4	4
Philosophy 21-22	Philosophy of Being	3	3
Military Science 23	Second Year Basic, General Military Science	3	
Theology 23	The Whole Christ		3
		17	17
	Junior[1]		
Chemistry 11-12	General and Analytical Chemistry	4	4
Physics 116—Mathematics 110	Introduction to Electromagnetics—Applied Mathematics	4	4
Physics 106-107	Electronics Principles and Circuits I-II	4	4
Philosophy 105-108	Philosophy of Man	3	3
		15	15
	Senior		
Physics 108-109	Advanced Electronics—High Frequency Electromagnetic Waves	4	4
Engineering 101—Physics 103	Elements of Electrical Engineering—Physical Optics and Waves	4	4
History 1-2	United States History	3	3
Philosophy 110-111	Philosophy of Human Conduct	3	3
Theology 103-113	The Christian Destiny, the Christian Worship	3	3
		17	17

[1] English 3, *Oral Communication*, will be required of all juniors unless the English Department judges the student to be sufficiently proficient to be excused.

PRE-ENGINEERING PROGRAM

The University provides a Pre-engineering Program which introduces the student to the highly technical training necessary for all phases of the engineering profession. This is a two-year course which enables the student to transfer to an engineering school to complete his degree work.

Of special importance is the University of Scranton's association with the Cooperative Engineering Program at the University of Detroit. For the student who has completed the pre-engineering curriculum at the University of Scranton, the three-year cooperative program offers alternate semesters of formal instruction and work experience in industry.

In addition to the valuable experience gained from industry, many students have been able to pay the cost of their tuition from the remuneration received for their work. This amounts to a substantial equivalent scholarship grant.

-ENGINEERING
URRICULUM

Department and No.	*Descriptive Title of Course*	*Credits Fall*	*Spring*
	Freshman		
English 5-6	College Composition and Rhetoric	3	3
Engineering 13	Engineering Graphics I	3	
Physics 18	Elementary Mechanics		4
Chemistry 11-12	General and Analytic Chemistry	4	4
Mathematics 13-14	Freshman Mathematics—Introduction to Analysis	4	4
Theology 3	The Christian Revelation	3	
Military Science 13	First Year Basic, General Military Science		3
		17	18
	Sophomore[1]		
English 21-22	Poetry and Dramatic Literature	3	3
Physics 19-20	Elementary Heat, Light, Sound—Electricity and Magnetism	4	4
Mathematics 21-22	Analysis	4	4
Theology 23	The Whole Christ	3	
Military Science 23	Second Year Basic, General Military Science		3
Engineering 24	Engineering Graphics II		3
Engineering 21	Engineering Mechanics—Statics—Dynamics	4	(4)
		18	17(21)

[1] Sophomores who have a quality point index of 2.7 or better may take Engineering 22, Engineering Dynamics, in second semester as an extra course for which they will be charged in accord with catalogue regulations.

DEGREE PROGRAMS IN BUSINESS ADMINISTRATION

The Business Administration curriculum gives the student a firm foundation in the liberal disciplines as well as a thorough understanding of economic principles, accounting, finance, management and marketing. The student is trained in an analytical approach to business problems. Individuality of thought and expression needed for civic and industrial leadership and the broad knowledge of economics and business necessary for executive responsibility are stressed.

Concentration may be in accounting and management or the student may arrange, with the approval of the department chairman, to follow other specialized programs of concentration.

BACHELOR OF SCIENCE
Concentration in Management

Department and No.	*Descriptive Title of Course*	*Credits Fall*	*Spring*
	Freshman		
English 5-6	College Composition and Rhetoric	3	3
Language 23-24	Intermediate Language	3	3
Mathematics 7-8 or	Fundamentals of Mathematics or	3	3
Mathematics 13-14	Freshman Mathematics—Introduction to Analysis	4	4
Business 1-2	Elementary Accounting	3	3
Theology 3	The Christian Revelation	3	
Military Science 13	First Year Basic, General Military Science		3
		15-16	15-16
	Sophomore		
English 21-22	Poetry and Dramatic Literature	3	3
Philosophy 21-22	Philosophy of Being	3	3
Economics 23-24	Principles of Economics	3	3
Military Science 23	Second Year Basic, General Military Science		3
Business 21-22	Intermediate—Managerial Accounting	3	3
Business 13-14	Business Law I-II	3	3
Theology 23	The Whole Christ	3	
		18	18
	Junior[1]		
Philosophy 105-108	Philosophy of Man	3	3
Business 108-107	Industrial Management—Marketing	3	3
Business 105-106	Business Statistics I-II	3	3
History 1-2	History of the United States	3	3
Physics 3—Chemistry 3, or Physics 4	Elements of Geophysics—Elements of Chemistry	3	3
		15	15

Department and No.	*Descriptive Title of Course*	*Credits Fall*	*Spring*
	Senior		
Philosophy 110-111	Philosophy of Human Conduct	3	3
Theology 103-113	The Christian Destiny—The Christian Worship	3	3
Business 170-160	Marketing Management—Business Policy	3	3
Business 172-171	Administrative Practices—Financial Management	3	3
Business 103-126	Money and Credit—Corporation Finance	3	3
		15	15

BACHELOR OF SCIENCE
Concentration in Accounting

	Freshman		
English 5-6	College Composition and Rhetoric	3	3
Language 23-24	Intermediate Language	3	3
Mathematics 7-8 or	Fundamentals of Mathematics or	3	3
Mathematics 13-14	Freshman Mathematics—Introduction to Analysis	4	4
Business 1-2	Elementary Accounting	3	3
Theology 3	The Christian Revelation	3	
Military Science 13	First Year Basic, General Military Science		3
		15-16	15-16
	Sophomore		
English 21-22	Poetry and Dramatic Literature	3	3
Business 21-22	Intermediate—Managerial Accounting	3	3
Economics 23-24	Principles of Economics	3	3
Philosophy 21-22	Philosophy of Being	3	3
Military Science 23	Second Year Basic, General Military Science		3
Business 13-14	Business Law I-II	3	3
Theology 23	The Whole Christ	3	
		18	18
	Junior[1]		
Philosophy 105-108	Philosophy of Man	3	3
Business 101-102	Advanced Accounting—Cost Accounting	3	3
Business 105-106	Business Statistics	3	3
History 1-2	History of the United States	3	3
Physics 3—Chemistry 3, or Physics 4	Elements of Geophysics—Elements of Chemistry	3	3
		15	15

[1] English 3, *Oral Communication*, will be required of all juniors unless the English Department

Department and No.	*Descriptive Title of Course*	*Credits Fall*	*Spring*
	Senior		
Philosophy 110-111	Philosophy of Human Conduct	3	3
Theology 103-113	The Christian Destiny—The Christian Worship	3	3
Business 121-122	Auditing Theory	3	3
Business 103-126	Money and Credit—Corporation Finance	3	3
Business 123-124	Federal Taxation I-II	3	3
		15	15

PROGRAMS IN TEACHER TRAINING

Since teaching is a profession which requires intellectual competence, a sound personality and self-dedication, no student is admitted directly from high school to a program in Education. A student who plans to train for teaching must register for his freshman year in the regular degree programs in the Arts and Social Sciences or in the Natural Sciences. He may apply for transfer to the Education Program at the end of his freshman or sophomore year if his academic record averages better than C, recommendations of his teachers are favorable, and evidence of a sound personality and competence in both written and oral English have been displayed.

Careful planning of a student's program and consultation with advisors from the subject field and the Education Department is necessary to properly fulfill the University's requirement of thirty (30) upper division subject matter credits, eighteen (18) of which must be in one field, and the Department of Public Instruction's certification requirements.

BACHELOR OF SCIENCE
Program Preparatory to Teaching in Secondary Schools

Department and No.	*Descriptive Title of Course*	*Credits Fall*	*Spring*
	Freshman		
English 5-6	College Composition and Rhetoric	3	3
Mathematics 7-8 or	Fundamentals of Mathematics or	3	3
Mathematics 13-14	Freshman Mathematics—Introduction to Analysis	4	4
Language 23-24	Intermediate Language	3	3
Theology 3	The Christian Revelation	3	
Military Science 13	First Year Basic, General Military Science		3
History 3-4	History of Modern Europe	3	3
		15-16	15-16
	Sophomore		
English 21-22	Poetry and Dramatic Literature	3	3
Philosophy 21-22	Philosophy of Being	3	3
History 1-2	History of the United States	3	3
Education 21-22	Social Foundation of Education—Educational Psychology	3	3
Military Science 23	Second Year Basic, General Military Science		3
Biology 3-4	General Biological Science	3	3
Theology 23	The Whole Christ	3	
		18	18

Department and No.	*Descriptive Title of Course*	*Credits Fall*	*Spring*
	Junior[1]		
Philosophy 105-108	Philosophy of Man	3	3
Electives	Subject Matter Electives	12	12
		15	15
	Senior		
Philosophy 110-111	Philosophy of Human Conduct	3	3
Theology 103-113	The Christian Destiny—The Christian Worship	3	3
Education 103-105	Reading and General Methods in Secondary School—Observation and Student Teaching	3	6
Education 104	Special Methods of Teaching in Subject Fields	3	
Electives	Subject Matter Electives	3	3
		15	15

[1] English 3, *Oral Communication*, will be required of all juniors unless the English Department judges the student to be sufficiently proficient to be excused.

THE HONORS PROGRAM

The purpose of the Honors Program is to provide intellectual stimulus and challenge to the superior student. This presumes not only intellectual commitment on the part of the student but the capacity, motivation, and the sense of inquiry needed to pursue the commitment. By participation in the Honors Program the student has the opportunity of developing his talents to the utmost during the four year college period.

The Honors Program: The program consists of: a) special classes in the core curriculum; b) tutorials; c) a senior project.

a. *The Core Curriculum:* The courses contained in the core curriculum cover the basic prescribed content of the regular courses but require intensification of study, reading in original sources, familiarity with analytic tools, criticism and scholarship. Discussion as well as lecture techniques are employed. Frequent and constant written work are required in each area of study to help the student to concretize, order and dramatize his thoughts in a form both clear and stable.

   Honors students are homogeneously grouped in their own sections for English and Philosophy; required hours of attendance at class are reduced to encourage more independent study.

b. *Tutorials:* The student and his advisor will work out a tutorial program designed to enrich the student's general education and to provide individually tailored academic and professional training. In general, junior tutorials will be in either broad cultural fields or in areas cognate to the major field of concentration. The senior tutorial will ordinarily be connected with the student's project. So that the student may have time for private study in depth, the tutorial courses may be substituted for electives or for required courses outside the core curriculum. The advisor will work out these substitutions with the appropriate department chairman and with the Dean when necessary.

c. *Senior Project:* Under the direction of the major department, a special project is arranged to give the student opportunity in his senior year for independent study and activity in synthesizing his knowledge in the field of concentration and integrating it with his other studies. Oral and written comprehensive examinations in the major field will be part of this requirement.

Admission to the Honors Program: Admission is on the basis of high school record, test scores, recommendations of teachers and school officials, interviews and expressed interest. The program is voluntary.

Students not initially selected may be included in the Honors Program if their academic work gives evidence that they are capable of handling the Honors Program. Students who fail to maintain a minimum average of 'B' or are unacceptable for any other reason are removed from the program at the discretion of the Faculty Council on Honors. The student's counselor advises the Council on the student's suitability for continuing.

At the end of sophomore year, the Faculty Council on Honors reviews all records of honors students and arranges interviews to determine whether the student is to be admitted to junior-senior honors.

At the invitation of the Dean, freshmen with outstanding high school records and high college board scores are admitted as pre-honors students at the beginning of freshman year. With the approval of their teachers, they usually become members of the program at the end of freshman year.

Distinction: A special distinction will be given at graduation to those who persevere in the Honors Program. This distinction will be the highest scholastic honor the University bestows.

Finance: There will be no increase in tuition for members of the Honors Program nor will there be any charge for the extra hours the honors students carry as part of the program. Any summer courses taken will be at the student's expense.

COURSES OF INSTRUCTION

This section of the bulletin presents the courses of instruction offered by each department of the University.

Department

Biology
Business Administration
Chemistry
Classical Languages
Economics
Education
Engineering
English
History
Mathematics
Military Science
Modern Languages
Philosophy
Physical Education
Physics
Political Science
Psychology
Social Science
Theology

DEPARTMENT OF BIOLOGY

Dr. Wolf, *Chairman*

Courses in the Department of Biology are designed to achieve the following objectives: 1. to present the fundamental scientific facts and concepts which are needed for an understanding of the living world and man's relation to it; 2. to develop habits of precision, accuracy, curiosity, critical evaluation, neatness and patience together with skill in laboratory techniques; 3. to prepare students for professional schools such as those of medicine, dentistry and allied fields or for advanced study or work in other biological fields.

To major in biological sciences the following courses are required:

Chemistry 11-12; 101-102; 120
Mathematics 13-14
Physics 1-2

Biology 1-2; 21-22; 103 and 105 with at least eight elective credits taken from Biology 23; 104; 120; 121; 124; 125. Students preparing for research in the basic preclinical sciences are advised to add Mathematics 21-22.

BIOL. 1 & 2 General Biology
A comprehensive study of the nature of living organisms, both plant and animal; their structure, function, development and relationships, including the problems of development, heredity and evolution. 2 hours lecture and four hours laboratory each semester. *8 credits*

BIOL. 3 & 4 General Biological Science
The nature of living organisms and general biological principles, as they affect man and in relation to his problems, are stressed in general terms. *6 credits*

BIOL. 21 & 22 Comparative Vertebrate Anatomy
(Prerequisite: Biology 1-2) Structure and phylogeny of vertebrate organ-systems, emphasizing mammalian structure and correlation with function. Shark, necturus, turtle, pigeon, cat subjected to detailed laboratory study. 2 hours lecture and 4 hours laboratory each semester. *8 credits*

BIOL. 23 Genetics
(Prerequisite: Biology 1-2 or 3-4) Principles and theories of heredity as developed by experimental breeding, biometrical and cytological methods with their applications to plant, animal and human heredity. 2 hours lecture and 4 hours laboratory. *4 credits*

BIOL. 91 & 92 Guided Independent Study
A tutorial program open to junior Honors students only. Content determined by mentor. Maximum enrollment 3 students. *Variable credit*

BIOL. 101 Cellular Biology
(Prerequisite: Biology 1-2 or 3-4) Morphology, physiology and biochemistry of the cell as the basic unit in all living organisms and a unifying theme of life. 2 hours lecture and 4 hours laboratory. *4 credits*

BIOL. 103 Histology
(Prerequisite: Biology 21-22) The microscopic sturucture and the functioning relationships of vertebrate tissues and organs with most attention devoted to the mammal. 2 hours lecture and 4 hours laboratory. *4 credits*

BIOL. 104 Microtechnique
(Corequisite: Biology 103) General and special methods in the preparation of animal and plant cells and tissues for microscopic study. 1 hour lecture and 6 hours laboratory. *4 credits*

BIOL. 105 Embryology
(Prerequisite: Biology 21-22) Comparative study of reproduction, gametogenesis, fertilization, cleavage, morphogenesis, development of organ-systems in frog, chick and pig. 2 hours lecture and 4 hours laboratory. *4 credits*

BIOL. 106 Principles of Heredity
(Prerequisite: Biology 3-4) A less technical presentation of the principles and concepts of heredity, stressing their practical applications to the problems of plant, animal and human inheritance. 2 hours lecture and 2 hours laboratory. *3 credits*

BIOL. 107 Anatomy & Physiology
(Prerequisites: Biology 3-4) Fundamentals of structure and function of the human body to develop an understanding of its physical nature and operation *3 credits*

BIOL. 108 Field Biology

(Prerequisite: Biology 3-4) Study of living organisms in relation to each other and to all aspects of environment, together with techniques for collecting and maintaining living organisms. 2 hours lecture and 2 hours laboratory. *3 credits*

BIOL. 120 General Physiology

(Prerequisites: Biology 21-22, Chem. 101-102, (Phys. 1-2) Physiological processes underlying the functioning of the animal organism. Biochemistry of protoplasm, enzymes, irritability, excitation, conduction, contractility, cellular physiology, and functions of mammalian organ-systems. 2 hours lecture and 4 hours laboratory. *4 credits*

BIOL. 121 Microbiology

(Prerequisites: Biology 21-22, Chem. 101-102, Phys. 1-2) Structure, function, growth, reproduction, heredity and relationships of bacteria, yeasts, molds, virus, including a brief survey of pathogens, and an introduction to disease and immunology. *4 credits*

BIOL. 124 Undergraduate Research

(Prerequisites: 12 credits in Biology, Chemistry 101-102, Physics 1-2) Individual problems for advanced students with sufficient background in biological and physical sciences. Subject time and credits arranged individually. *Variable credit*

BIOL. 125 Introduction to Parasitology

(Prerequisites: Biology 21-22, Chem. 101-102) Classification, structure, life cycles and host relationships of parasites from major animal phyla, including diseases, methods of control and treatment of infestations in vertebrates. 2 hours lecture and 4 hours laboratory. *4 credits*

BIOL. 191 & 192 Senior Tutorial

A tutorial program open only to senior Honors students majoring in Biology. The course involves the preparation of a special project which is reported in writing and defended orally before the faculty of the department. *Variable credit*

Students at Work in the Biology Laboratory

DEPARTMENT OF BUSINESS ADMINISTRATION

Dr. Senker, *Chairman*

Courses in Business Administration are designed to: 1. Encourage individuality of thought and expression by the student; to develop in him an analytical approach to the solution of current business problems and thereby develop future civic and industrial leaders. 2. Train for executive positions in the business world through the study of accounting, law and theoretical as well as applied economics; to serve as preliminary training for those wishing to enter the field of law or graduate study in business; to train intensively those wishing to enter the field of public or private accounting.

The following courses are required of all business majors: Mathematics 7-8 or 13-14; Economics 23-24; Business 1-2; 21-22; 13-14; 103-126; 105-106. In addition the accounting concentration requires Business 101-102; 121-122; 123-124. The management concentration requires Business 107-108, 160, 170, 171, 172.

BUS. 1 Elementary Accounting I

An introductory course designed to give an overall view of the principles, methods, purposes and procedures of accounting including financial statements, theory of accounts, journalizing, posting, periodic summary of data, special journals, adjusting entries, receivable and inventories. 3 hours lecture and 1 hour laboratory. *3 credits*

BUS. 2 Elementary Accounting II

(Prerequisite: Business 1) A study of the principles of accounting for plant assets-depreciation, the voucher system, property and sales taxes, payrolls, partnerships and corporations. 3 hours lecture and 1 hour laboratory. *3 credits*

BUS. 13 Business Law I

Introduction to the study of law, its nature and administration. The law of contracts, sales, transportation and storage of goods. *3 credits*

BUS. 14 Business Law II

(Prerequisite: Business 13) A study of the laws of credit transactions, negotiable instruments, agency, employer-employee relationships, insurance and real property. *3 credits*

BUS. 15 Government Regulation of Business

(Prerequisite: Economics 24 & Business 14) The basis and nature of government regulations of business. Purposes, methods, areas and limits of controls. *3 credits*

BUS. 21 Intermediate Accounting

(Prerequisite: Business 2) A comprehensive study of advanced corporate accounting principles and procedures. 3 hours lecture and 1 hour laboratory. *3 credits*

BUS. 22 Management Accounting

(Prerequisite: Business 21) A study of selected accounting techniques required in compiling and interpreting financial data for managerial decision-making. 3 hours lecture and 1 hour laboratory. *3 credits*

BUS. 91 & 92 Guided Independent Study

A tutorial program open to junior Honors students only. Content determined by mentor. Maximum enrollment 3 students. *Variable credit*

BUS. 101 Advanced Accounting

(Prerequisite: Business 21) Special sales procedures: installment sales, consignments, agency and branch accounting. Consolidated accounting. Statement of affairs. Receivership accounts and statements. 3 hours lecture and 1 hour laboratory. *3 credits*

BUS. 102 Cost Accounting

(Prerequisite: Business 21) The managerial aspects of cost accounting. Process costs, specific job order costs, standard costs, estimated cost systems and budgets. 3 hours lecture and 1 hour laboratory. *3 credits*

BUS. 103 Money and Credit

(Prerequisite: Economics 24) A survey of money, credit and prices and their effects on economic stability. Credit controls by the Federal Reserve System. *3 credits*

BUS. 105 Business Statistics I

(Prerequisite: Economics 24) Statistical investigations. Use of mechanical equipment. Sampling and concept of error. Presentation of data. Frequency distributions. Averages. Dispersion and skewness. 2 hours lecture and 2 hours laboratory. *3 credits*

BUS. 106 Business Statistics II

(Prerequisite: Business 105) Introduction to the theory of probability. Index numbers. Time series analysis. Correlation and forecasting. 2 hours lecture and 2 hours laboratory. *3 credits*

BUS. 107 Marketing

Product distribution from its inception to ultimate use by consumer. Market research and analysis. Channels of distribution. *3 credits*

BUS. 108 Industrial Management

Operating principles, procedures and problems. The development and operation of the industrial plant. Manufacturing processes. Factory trips. *3 credits*

BUS. 121 Auditing Theory I

(Prerequisite: Business 21) A review of generally accepted accounting principles and applicable auditing standards. Preparation of work papers. Auditing original records and assets. 3 hours lecture and 1 hour laboratory. *3 credits*

BUS. 122 Auditing Theory II

(Prerequisite: Business 121) Audit of liabilities and proprietorship. Income statement. The audit report. Internal auditing. Ethics of the profession. Audit case problems. 3 hours lecture and 1 hour laboratory. *3 credits*

BUS. 123 Federal Taxes I

(Prerequisite: Business 121) Individual and partnership income taxes. Three lecture hours and one hour laboratory. *3 credits*

BUS. 124 Federal Taxes II

(Prerequisite: Business 123) Corporation income taxes, with special emphasis on current Internal Revenue Service regulations. Three lecture hours and one hour laboratory. *3 credits*

BUS. 126 Corporation Finance

(Prerequisite: Economics 24) The financial structure and problems of business corporation. Promotion. Investment banking. The security markets. Expansion, failure, reorganizations and receiverships. *3 credits*

BUS. 160 Business Policy

(Prerequisite: Business 108) The aim of the course is to coordinate the work given in specialized management courses, to show the interrelation between economic theory and business problems. Actual cases in business problems are analyzed and individual research in business problems is conducted by the student. *3 credits*

BUS. 165 Quality Control

(Prerequisite: Business 106) Quality control charts for variables and attributes. Theory of sampling, and regression analysis. Applications in typical manufacturing plants. Laboratory. *3 credits*

BUS. 170 Marketing Management

(Prerequisite: Business 107) Managerial problems of product development and distribution. Product promotion. Personal and mass distribution. Pricing. *3 credits*

BUS. 171 Financial Administration

(Prerequisite: Business 103) The functions of various banking, monetary and financial institutions and their use by business. *3 credits*

BUS. 172 Administrative Practices

(Prerequisites: Business 108) Managerial functions and techniques integrated with case studies and problems. *3 credits*

BUS. 191 & 192 Senior Tutorial

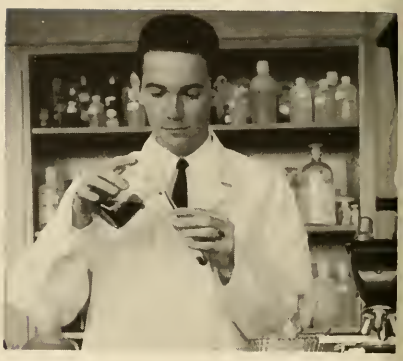
A tutorial program open only to senior Honors students majoring in Business. The course involves the preparation of a special project which is reported in writing and defended orally before the faculty of the department. *Variable credit*

DEPARTMENT OF CHEMISTRY

Dr. Burti, *Chairman*

The aims of the department are: 1. to train the student in analytical skills and scientific methodology and develop the character-traits of patience, pertinacity, honesty and neatness, which are indispensable to the scientist; 2. to train the student for a position of responsibility, either as an advanced student in a graduate or professional school or as a member of the staff of an educational, industrial or research institution.

To major in Chemistry the following courses are required: Mathematics 13-14; 21-22; Physics 11-12; Chemistry 11-12 plus thirty-two (32) additional credits in upper division courses including Chemistry 101, 102, 103; Chemistry 123, 124, 125, 127, 128.



CHEM. 1 & 2 General Chemistry and Qualitative Analysis

A study of the laws, theories and principles of general chemistry and qualitative analysis. Laboratory work includes semi-micro techniques for qualitative identification and separation of cations and anions. 3 hours lecture and 3 hours laboratory each semester. *8 credits*

CHEM. 3 Elements of Chemistry

A brief survey of the field of chemistry, treating some of the basic concepts of chemistry. The course is conducted on a lecture-demonstration basis. *3 credits*

CHEM. 11 & 12 General and Analytical Chemistry

A study of the laws, theories and principles of general chemistry together with qualitative and quantitative analysis. Laboratory work covers semi-micro techniques for qualitative analysis and gravimetric and volumetric analysis. 3 hours lecture and 3 hours laboratory each semester. *8 credits*

CHEM. 22 Quantitative Analysis I

(Prerequisites: Chemistry 1-2) A survey of the general principles of gravimetric, volumetric and electrolytic analyses. Laboratory work stresses technique. 2 hours lecture and 6 hours laboratory. *4 credits*

CHEM. 23 Quantitative Analysis II

(Prerequisite: Chemistry 22) Advanced methods of analysis such as spectrophotometry, polarography, compleximetry, electrometric and conductometric titrations. Laboratory stresses instrumental analysis and techniques. 2 hours of lecture and 6 hours of laboratory. *4 credits*

CHEM. 91 & 92 Guided Independent Study

A tutorial program open to junior Honors students only. Content determined by mentor. Maximum enrollment 3 students. *Variable credit*

CHEM. 101 & 102 Organic Chemistry I-II

(Prerequisites: Chemistry 11-12) An introduction to the chemistry of the principal aliphatic and aromatic compounds of carbon and their derivatives. Laboratory work includes investigation of the chemical properties and synthesis of the compounds studied. 3 hours lecture and 3 hours laboratory each semester. *8 credits*

CHEM. 103 Organic Chemistry III

(Prerequisites: Chemistry 101-102) A continuation of Chemistry 101-102, including a study of the alicyclics and heterocyclics, the organic dyes and the naturally occurring compounds of carbon. 2 hours lecture and 6 hours laboratory. *4 credits*

CHEM. 120 Fundamentals of Physical Chemistry

(Prerequisite: Chemistry 11-12) A basic course in physical chemistry, stressing fundamental concepts of thermodynamics, kinetics, electrochemistry and colloidal systems. Laboratory experiments involve solution and colloidal chemistry, together with basic methods of instrumental analysis. 3 hours lecture and 3 hours laboratory. *4 credits*

CHEM. 121 Biochemistry I

(Prerequisites: Chemistry 102 & 124) Principles of biochemistry and biophysical chemistry, including enzyme kinetics. A study of the chemical nature of lipids, carbohydrates, proteins, nucleic acids and enzymes including relationships between vitamins, hormones and inorganic compounds. 2 hours of lecture and 3 hours of laboratory. *3 credits*

CHEM. 122 Biochemistry II

(Prerequisite: Chemistry 102 & 124) A study of the metabolism, digestion and absorption of carbohydrates, lipids, amino acids and proteins, including energy transformations together with the role of enzyme systems in the above processes. 2 hours lecture and 3 hours laboratory. *3 credits*

CHEM. 123 & 124 Physical Chemistry I-II

(Prerequisites: Chemistry 11-12, Mathematics 21-22) A study of the physico-chemical properties of matter and the dynamics of chemical reactions. Laboratory experiments illustrate the principles studied. 4 hours lecture first semester; 2 hours lecture and 6 hours laboratory second semester. *8 credits*

CHEM. 125 Instrumental Analysis

(Prerequisite: Chem. 123) Instrumental methods of analysis consisting of theory and application of such instrumental techniques as spectroscopy, polarography, and instrumental titrimetry. Laboratory stresses instrumental analysis and techniques. 2 hours of lecture and 6 hours of laboratory. *4 credits*

CHEM. 126 Organic Analysis

(Prerequisite: Chemistry 103) A study of the systematic classification and identification of organic compounds from their solubilities, group reactions, gas-liquid partition chromatograms and IR absorption curves, including the separation and identification of the components of organic mixtures. 1 hour of lecture and 6 hours of laboratory. *3 credits*

CHEM. 127 Chemical Literature

A study of the published source material of chemical science and chemical industry. The course includes practical instruction in library technique. One hour lecture. *1 credit*

CHEM. 128 Seminar

(Prerequisites: Chemistry 101-102, 123-124) A discussion of advanced topics in chemistry for students majoring in chemistry. Assignments will be made from various areas of chemistry, and full discussion by the participants is expected. 1 hour each week. *1 credit*

CHEM. 129 Physical Chemistry III

(Prerequisites: Chemistry 124) Special topics, including classical and quantum statistics and thermodynamics, molecular and solid state structure and quantum chemistry. 2 hours lecture. *2 credits*

CHEM. 130 Inorganic Chemistry

(Prerequisite: Chemistry 124) Descriptive chemistry of selected elements and their compounds, correlated with the periodic table, physical properties, atomic and molecular structure, bonding and the ligand theory. 2 hours of lecture. *2 credits*

CHEM. 132 Undergraduate Research

(Prerequisites: Chemistry 103, 124 & 127) Individual study and research in connection with a specific chemical problem. The course taken with the permission of the Chemistry Department Staff. *2 credits*

CHEM. 191 & 192 Senior Tutorial

A tutorial program open only to senior Honors students majoring in Chemistry. The course involves the preparation of a special project which is reported in writing and defended orally before the faculty of the department. *Variable credit*

DEPARTMENT OF CLASSICAL LANGUAGES

Mr. Mann, *Chairman*

Courses in Classical Languages give the student a solid foundation in Latin and Greek to engender an appreciation of the liberal aspects of Classical studies.

Classics majors must present a minimum of twenty-four (24) semester hours in upper division courses.

Students majoring in other fields satisfy the Latin requirement of the Bachelor of Arts course by taking Latin 107-108, or, exceptionally, any upper-division courses. Students wishing to commence their study of Latin at the University must arrange to take Latin 1-2 during Summer Sessions; they would then follow a sequence of Latin 23-24; 107-108.

GREEK

GREEK 1 & 2 Elementary Greek
An intensive course in the fundamentals of Classical Greek grammar. *6 credits*

GREEK 23 & 24 Intermediate Greek
Review of fundamentals. Readings from Xenophon, Euripides and the New Testament *6 credits*

GREEK 91 & 92 Guided Independent Study
A tutorial program open to junior Honors students only. Content determined by mentor. Maximum enrollment 3 students. *Variable credit*

GREEK 101 Homer
Selected readings from the Iliad and the Odyssey. An appreciation of the diction, thought and beauty of Homer. *3 credits*

GREEK 102 Thucydides
Evaluation of fifth century Athens and of Thucydides as philosopher and historian. Readings from the History of the Peloponnesian War. *3 credits*

GREEK 103 Greek Philosophy
Greek philosophical thought from Thales to the Neoplatonism of Plotinus. *3 credits*

GREEK 104 Christian Greek Literature
Selections from St. Ignatius of Antioch, St. Polycarp and St. Basil. Lectures on the development of Christian Greek literature. *3 credits*

GREEK 105 Plato
Reading of the Apology. A philosophical, historical and literary analysis of Plato and Socrates. Supplementary reading in the Crito and Phaedo. *3 credits*

GREEK 106 Euripides
Reading and analysis of the Medea with an evaluation of the art and thought of Euripides. *3 credits*

GREEK 107 Sophocles
Evaluation of Sophocles as a poet, dramatist and thinker through a study of the Oedipus Tyrannus. *3 credits*

GREEK 108 Demosthenes
An analysis of the De Corona as a model of rhetoric. Consideration of the rhetorical norms established by Aristotle. *3 credits*

GREEK 109 (110) Readings in Greek Literature
Selections from Greek writers to suit the student's special interest. *3-6 credits*

GREEK 191 & 192 Senior Tutorial
A tutorial program open only to senior Honors students majoring in Greek. The course involves the preparation of a special project which is reported in writing and defended orally before the faculty of the department. *Variable credit*

LATIN

LATIN 1 & 2 Latin Composition
Exercises in the writing of correct Latin prose. The course is intended for Classics majors and for prospective teachers of Latin. *6 credits*

LATIN 23 & 24 Intermediate Latin
Review of fundamentals. Reading of selections from Caesar, Cicero and Virgil. *6 credits*

LATIN 91 & 92 Guided Independent Study
A tutorial program open to junior Honors students only. Content determined by mentor. Maximum enrollment 3 students. *Variable credit*

LATIN 101 Horace and Juvenal
A study of Roman satire revealing the life, manners and thought of the times. *3 credits*

LATIN 102 Cicero: Rhetoric
The Pro Lege Manilia and Pro Milone are studied from the standpoint of rhetorical analysis.
3 credits

LATIN 103 Cicero and Lucretius
Selections from the Tusculan Disputations and the De Rerum Natura illustrate contrasting developments in Roman thinking. The course includes a brief survey of ancient philosophy. *3 credits*

LATIN 104 Christian Latin Literature
Selections from Christian Latin writers with concentration on the Confessions of St. Augustine. Lectures on the development of Christian Latin literature. *3 credits*

LATIN 105 Plautus and Terence
Reading of the Duo Captivi and Phormio. Lectures on the development of Roman comedy.
3 credits

LATIN 106 Tacitus
The Agricola and Germania are read. A study of style and content in Tacitus. Reference to the Annals and Histories. *3 credits*

LATIN 107 Livy and Virgil
Selections from Livy I and XXI, and from Books VII-XII of Virgil's Aeneid. *3 credits*

LATIN 108 Horace and Catullus
Lyric poetry illustrated by the Odes of Horace and selected poems of Catullus. *3 credits*

LATIN 109 (110) Readings in Latin Literature
Selections from Latin writers to suit the student's special interest. *3-6 credits*

LATIN 191 & 192 Senior Tutorial
A tutorial program open only to senior Honors students majoring in Latin. The course involves the preparation of a special project which is reported in writing and defended orally before the faculty of the department. *Variable credit*

FINE ARTS

ART 101 & 102 Appreciation of the Visual Arts
The interpretation, appreciation and aesthetic norms of art, architecture and sculpture. Aegean civilization. Greece and Rome. Early Christian and Byzantine art. Romanesque and Gothic classics will be discussed during the first semester. The spring term includes the Renaissance painting, sculpture and architecture; Baroque period painting in the Low Countries and England. French art from classicism to post-impressionism. Modern trends. *6 credits*

ART 103 & 104 Music Appreciation
Introduction to elements and forms. Analysis and interpretation of respected masterpieces to encourage perceptive listening habits. The first semester will preview music developments to Bach, while the second semester will treat compositions from Bach to the present including America. No previous formal training is required. *6 credits*

ART 105 & 106 The History and Art of the Cinema
A study of the historical development and techniques of motion pictures as a major form in our modern culture. The first semester embraces the history, grammar and poetics of Film, while the spring semester will be devoted to Films' rhetoric, aesthetics and criticism. *6 credits*

The University Singers

DEPARTMENT OF ECONOMICS

Dr. Senker, *Chairman*

Courses in economics are designed to provide the terminal student and the prospective graduate student with a basic understanding of the economic forces which are part of the structure of our society; to provide a solid foundation in economic theory for business administration students.

A major in Economics in the Social Science or Liberal Arts Curriculum shall consist of Economics 23, 24, 102, 104, 115, 116, 120, 121, 125 and 126. Among the minor elective courses, Business 1 and 2 should be included by Economics major plus six (6) other electives drawn from the Humanities, Social Sciences or Natural Sciences.

ECON. 23 Principles of Economics I
Modern economic systems. Problems of production and consumption. Income determination. Economic role of the government. Fiscal, monetary, and stabilization policies. *3 credits*

ECON. 24 Principles of Economics II
(Prerequisite: Economics 23) Value and price determination. Distribution of income. International trade problems. Comparative economic systems. *3 credits*

ECON. 91 & 92 Guided Independent Study
A tutorial program open to junior Honors students only. Content determined by mentor. Maximum enrollment 3 students. *Variable credit*

ECON. 102 History of Economic Thought
(Prerequisite: Economics 24) A survey of the origins of economic thought. Particular stress is placed on the economic and socio-political factors of the time. *3 credits*

ECON. 103 Economic Geography
(Prerequisite: Economics 24) The relation of physical factors and economic conditions to the production and exchange of the world's leading commercial products. The major continents are studied with emphasis on their relationship to the United States. *3 credits*

ECON. 104 United States Economic History
The economic forces that conditioned the development of the United States prior to 1860. The emergence of large-scale enterprise. Development of the United States as a major world power. World War II and post-war problems. *3 credits*

ECON. 105 & 106 Labor Legislation
(Prerequisite: Economics 24) The study of the economic forces which have engendered labor legislation, and a case analysis of the effect of resulting conditions on employer-employee relations. A survey of the Acts of Congress of the United States and of the legislature of the Commonwealth of Pennsylvania in the field of industrial relations. *6 credits*

ECON. 115 Intermediate Economics
(Prerequisite: Economics 24) An analysis of production and cost theories. Pure competition, monopoly, oligopoly, and monopolistic competition. Factor pricing, resource allocation, and income distribution. *3 credits*

ECON. 116 Macroeconomic Analysis
(Prerequisite. Economics 24) Study of national income accounting, price level fluctuations, problems of full employment, impact of monetary and fiscal policies on the income level and distribution. *3 credits*

ECON. 120 Money and Credit
(Prerequisite: Economics 24) A survey of money, credit and prices and their effects on economic stability. Credit controls by the Federal Reserve System. *3 credits*

ECON. 121 Corporation Finance
(Prerequisite: Economics 24) The financial structure and problems of business corporation. Promotion. Investment banking. The security markets. Expansion, failure, reorganizations and receiverships. *3 credits*

ECON. 125 Statistics I

(Prerequisite: Economics 24) Statistical investigations. Use of mechanical equipment. Sampling and concept of error. Presentation of data. Frequency distributions. Averages. Dispersion and skewness. 2 hours lecture and 2 hours laboratory. *3 credits*

ECON. 126 Statistics II

(Prerequisite: Economics 125) Introduction to the theory of probability. Index numbers. Time series analysis. Correlation and forecasting. 2 hours lecture and 2 hours laboratory. *3 credits*

ECON. 150 Labor Problems

Study of labor as a social and economic group; methods of dealing with insecurity and inadequate income; labor-management relations. *3 credits*

ECON. 191 & 192 Senior Tutorial

A tutorial program open only to senior Honors students majoring in Economics. The course involves the preparation of a special project which is reported in writing and defended orally before the faculty of the department. *Variable credit*

Rally at the University Weekend Festivities

DEPARTMENT OF EDUCATION

Dr. Lennon, *Chairman*
Dr. Curtis, *Director of Student Teaching*

The aims of the Department of Education are: 1. to develop in the individual those professional qualities required for successful teaching; 2. to offer professional training for certification as a secondary school teacher; 3. to meet requests for specific courses by teachers in service; 4. to aid in the professional development of teachers by presenting a well integrated program of graduate studies leading to the Masters Degree.

Student teaching will be arranged for students who meet course requirements and have other necessary qualifications.

EDUC. 21 Social Foundation of Education
The characteristics of the public school system in the United States; the role of education in our current society and the relationship of schools to other social institutions. *3 credits*

EDUC. 22 Educational Psychology
Stresses growth and development, individual differences, intelligence, motivation, learning principles, transfer of training. *3 credits*

SECONDARY EDUCATION

EDUC. 103 Reading and General Methods in Secondary School
(Prerequisites: Education 21 & 22. Corequisite: Education 104) Curriculum, principles and methods of instruction, including the use of audio-visual aids. Certain basic reading skills at the secondary level are studied. This is followed by a carefully planned program of oral and silent reading in the student's subject field in conjunction with Education 104. *3 credits*

EDUC. 104 Special Methods of Teaching in Subject Fields
Secondary school objectives, curricula and general principles of instruction. Preparation of units and lesson plans; mock teaching under supervision of Education and subject-matter faculty. *3 credits*

EDUC. 105 Observation and Student Teaching
(Prerequisites: Education 21-22, 103-104) Observation and study of classroom teaching are combined with actual student teaching under expert supervision. Group conferences and personal interviews with the supervisors. *6 credits*

EDUC. 106 Reading in the Secondary School
This course is designed for junior and senior high school teachers in order to acquaint them with fundamentals of reading instruction. Special emphasis is placed upon word attack, comprehension, study, location and appreciation. The need for a carefully planned program of reading instruction will be developed at all secondary grade levels. *3 credits*

DEPARTMENT OF ENGINEERING

Mr. Plonsky, *Chairman*

The objective of the Engineering Department is to introduce the student into the highly technical training necessary for all phases of the engineering profession. Care is taken to provide not only technical but liberal arts training.

ENGR. 13 Engineering Graphics I
The drawing of objects in orthographic, isometric, oblique and sectional views. Dimensioning, vector geometry, graphs, nomographs and graphical calculus. Fundamental applications of the slide rule. One hour lecture and recitation and six hours laboratory. *3 credits*

ENGR. 21 Engineering Mechanics-Statics
(Prerequisite: Physics 18 or Physics 11; Corequisite: Mathematics 21) Various types of force systems; resultants and conditions of equilibrium; stress analysis of the parts of different types of structures by graphical, algebraic and vector methods; frictional forces; centroids, and second moments of areas and solids. *4 credits*

ENGR. 22 Engineering Mechanics-Dynamics
(Prerequisite: Engineering 21; Corequisite: Mathematics 22) Kinematics of particles and rigid bodies which includes linear, curvilinear, angular and relative motions; inertia, forces, impulse, momentum, work, energy and power; mechanical vibrations. *4 credits*

ENGR. 23 Plane Surveying
(Prerequisite: Mathematics 13) The Dumpy and Wye levels, transits, their use, care and adjustment. Running of closed and open traverses, determination of the azimuth of a course by solar observation, stadia shots for "topo" and location data, bench mark and profile leveling, staking out of simple curves. Calculation of areas and vertical curves; plotting of a map from a deed; earthwork calculations. 1½ hours lecture and recitation, 4½ hours field work. *3 credits*

ENGR. 24 Engineering Graphics II
(Prerequisite: Engineering 13) The geometric method of projection of points, lines and planes and the application of these methods to graphical solution of engineering problems involving lines, planes and solids including vector problems; intersections of solids leading to the development of surfaces; graphical differentiation and integration One hour of lecture and recitation; six hours laboratory. *3 credits*

ENGR. 43 Strength of Materials
(Prerequisites: Engineering 21, Mathematics 22) Stresses and strains in compression, tension and shear. Torsion in shafts. Joints. Shear and bending moment equations and diagrams. Stresses and deflection in beams. Beams of two materials. Resilience. Columns. *3 credits*

ENGR. 44 Circuit Analysis
(Prerequisites: Physics 12 and Mathematics 21) Intermediate course treating Kirchhoff's Laws, resistance networks, steady state and transient conditions in RC, RL and RLC networks, Thevenin's and Norton's theorems, and electronic devices and their equivalent circuits. Three hours lecture and two hours laboratory per week. *4 credits*

ENGR. 101 Elements of Electrical Engineering
(Prerequisite: Physics 12 or 20) The application of the principles of electric and magnetic circuits to the theory and performance of electrical machinery. Experimental work in the electrical machinery laboratory. 3 hours lecture and 3 hours laboratory. *4 credits*

ENGR. 102 Digital Computer and an Introduction to Numerical Analysis
Part of this course is devoted to the techniques of programming scientific problems for the Burrough's 205 digital computer. The use of both the basic machine language as well as the Algol compiler language is required. The remaining time is assigned to the introduction and treatment of selected topics in numerical analysis. Two hours of lecture and recitation; two hours of laboratory. *3 credits*

ENGR. 103 Computer Programming
This course is devoted to the techniques of programming scientific and business problems for the Burrough's 205 digital computer. The use of both the basic machine language, as well as the Algol compiler is required. Techniques for handling card input and output is treated. One hour of lecture and recitation; one hour of laboratory. *2 credits*

ENGR. 191 & 192 Senior Tutorial
A tutorial program open only to senior Honors students majoring in Mathematics and Physics. The course involves the preparation of special projects which are reported in writing and defended orally before the faculty of the department. *Variable credit*

DEPARTMENT OF ENGLISH

Dr. Ryan, *Chairman*

The aim of the Department of English is to furnish the student with a balanced program in English which will realize the objectives of a liberal arts college. This program has a threefold overall objective: the practical development of the communication skills of the individual; the practical development of his critical and analytical ability; and his cultural development.

All students are required to take English 5-6, and English 21-22. To major in English the following courses are required: either English 133 or 134; English 135; either English 136 or 137; and English 145. The remaining twelve hours of credit should include at least one course from each of the following course groupings: A). English 136, 137, 138; B). English 139, 140, 141; C). English 142, 143, 144; and D). English 146, 147, 148. Those majors who are preparing to teach at the secondary school level may substitute English 125 for one of the "group" courses. Senior English majors in the Honors Program may substitute the Senior Honors Tutorials, English 191-192, for two of the "group" courses.

Developmental Reading
Required of students who show deficiency in reading. No credit—Fee $50.00.

ENGL. 3 Oral Communication
Designed to develop proficiency in the basic skills of oral communication. Voice and diction factors. Preparation and delivery of speeches of information and persuasion. Required of all Juniors except those excused by the Department of English.
3 credits

ENGL. 5 & 6 Composition and Rhetoric
Mastery of the techniques of communication, the principles of literary structure, the qualities of style. Exposition, narration and description. Stressing the inter-relationship of logic and language, rhetoric discovers the rules that underlie effective expression of ideas; and develops the student's skill in applying those rules, particularly in argumentation and persuasion. *6 credits*

ENGL. 21 Poetic Literature
An introduction to the study of poetry: the nature, elements and development of poetic types; and the principles of versification. *3 credits*

ENGL. 22 Dramatic Literature
The chronological and structural development of drama, from the classic theatre of Athens to the present day. *3 credits*

ENGL. 91 & 92 Guided Independent Study
A tutorial program open to Sophomore and Junior Honors students only. Content determined by mentor. Maximum enrollment in any tutorial—3 students. *Variable credit*

ENGL. 125 Advanced Composition
The inter-relationship of grammar, logic, rhetoric, semantics and criticism in the communication of ideas. *3 credits*

ENGL. 131 & 132 Masterworks of Western Civilization
Study of masterpieces of literature, from the Hebrew Old Testament and classic Greek to the modern European, to illustrate the development of Western civilization. *6 credits*

ENGL. 133 Practical Criticism
A study of the principles of literary criticism and their application to selected works of literature.
3 credits

ENGL. 134 The English Language
A study of the development of the English language to the present day, with an introduction to the science of linguistics. *3 credits*

ENGL. 135 Chaucer and the Middle Ages
A study of the works of Geoffrey Chaucer, with particular emphasis on his *Canterbury Tales; Piers Plowman;* the Medieval drama; and Malory.
3 credits

ENGL. 136 Shakespeare (Tragedies)
Critical and appreciative study of five major tragedies and five of the principal chronicle plays.
3 credits

ENGL. 137 Shakespeare (Comedies)
Critical and appreciative study of the major comedies and of the comic sequences in the chronicle plays. *3 credits*

ENGL. 138 Literature of the 16th Century

A study of the major literary figures of the 16th Century: Wyatt, Surrey, Sidney, Spenser, and the Tudor playwrights. *3 credits*

ENGL. 139 17th Century Poetry: the Metaphysicals and Milton

A study of the works of the metaphysical poets, with emphasis on John Donne; and of the major poems of Milton. *3 credits*

ENGL. 140 The Augustan Age

A survey of the literature of England from 1660 to 1750: Dryden, Pope, Swift, Addison, and Steele. *3 credits*

ENGL. 141 Johnson and His Circle

A study of the literature of the second half of the 18th Century: Johnson, Boswell, the pre-Romantics, and the beginnings of the English novel. *3 credits*

ENGL. 142 The Romantic Period

A study of the poetry of: Wordsworth, Coleridge, Byron, Shelley, and Keats. *3 credits*

ENGL. 143 Victorian Prose and Poetry

Critical and appreciative study of the outstanding authors of the Victorian period. *3 credits*

ENGL. 144 The English Novel: Richardson to Hardy

A study of the development of the English novel from its 18th Century beginnings to Thomas Hardy. *3 credits*

ENGL. 145 American Literature to 1900

A survey of the work of major American authors from the Colonial period through the 19th Century. *3 credits*

ENGL. 146 Modern British and American Poetry

Study of major British and American poets: Frost, Williams, Stevens, Marianne Moore, Eliot, Dylan Thomas, Yeats. *3 credits*

ENGL. 147 Modern British and American Drama

A study of British drama from the time of the Irish dramatic revival, and of American drama from O'Neill to the present. *3 credits*

ENGL. 148 Modern British and American Novel

A study of British and American fiction from 1900 to the present. *3 credits*

ENGL. 191 & 192 Senior Honors Tutorial

A tutorial program open only to Senior Honors students majoring in English. The course involves the preparation of a special project which is reported in writing and defended orally before a Departmental committee. Enrollment in any Senior tutorial is limited to 3 students.

Variable credit

Radiation Detection Equipment

DEPARTMENT OF HISTORY

Mr. Brown, *Chairman*

HISTORY

The department aims: 1. to train the student in solid historical methodology; 2. to present history as the study of interdependent human activities and concrete events which have social significance; 3. to engender an intelligent and critically sympathetic understanding of various civilizations and cultures.

For the History major, History 1-2, 3-4, plus twenty-four (24) credit hours from upper-division courses are required. The department strongly recommends History 110, 111, 118, 119, 126, 127, and 120 or 132 as the courses best designed to give the student that comprehensiveness of understanding which constitutes one of the major aims of the department.

HIST. 1 & 2 History of the United States

The United States from the time of its European beginnings to the present, with special emphasis on the history of Pennsylvania; colonial origins to the end of the Civil War; reconstruction to the present. (History 1 is prerequisite to History 2.) *6 credits*

HIST. 3 & 4 Europe, 1500 to the Present

European history with concentration upon the political aspects of European development. The rise of national monarchies; political developments; industrialism; the new nationalism and liberalism. (History 3 is prerequisite to History 4.) *6 credits*

HIST. 91 & 92 Guided Independent Study

A tutorial program open to junior Honors students only. Content determined by mentor. Maximum enrollment 3 students. *Variable credit*

HIST. 110 & 111 Medieval History

A survey of medieval political and religious institutions. The origins and diffusion of Christianity; the contribution of imperial Rome; the emergence of political authority; the spread of learning under monastic influence; the role of the Papacy; the achievements of the Crusades. Decline of the Eastern Empire; the Holy Roman Empire; the Church in the period of Innocent III, the Renaissance of the twelfth and thirteenth centuries; the decline of medieval Europe before the secularization of thought in the field of politics, economics and religion. *6 credits*

HIST. 112 & 113 Renaissance and Reformation

(Prerequisite: History 3 & 4) An intensive study of Europe from the fourteenth to the middle of the seventeenth century. Humanism; the bourgeoise; breakdown of medieval unity; Protestant Revolution; Catholic Reformation; religious wars; Peace of Westphalia. *6 credits*

HIST. 114 French Revolution to 1815

(Prerequisite: History 3 & 4) Historical antecedents; the philosophies; republicanism and the fall of the monarchy; Reign of Terror; the Directory; Napoleon; internal achievements; significance of the Spanish and Russian Campaigns; and War of Liberation. *3 credits*

HIST. 115 Europe 1815-1875

(Prerequisite: History 3 & 4) The Congress of Vienna and the European restoration; Industrialism, Liberalism, Socialism, and Nationalism; the revolutions of the 1840's; the unification of Italy and the German Empire; Russia and the Lesser States of Europe. The Third French Republic. *3 credits*

HIST. 116 Europe 1875-1920

(Prerequisite: History 3 & 4) The domestic problems confronting France, Italy, Germany, Central and Eastern Europe, and Russia. Competition for colonies and markets; the growth of alliances; World War I and the Treaty of Versailles. The Russian Revolution and Communism. *3 credits*

HIST. 117 Europe 1920 to Present

(Prerequisite: History 3 & 4) Russia becomes the U.S.S.R.; the European struggle for security; Italian Fascism; Rise of Nazi Germany; Asia between the two wars; World War II; and the Cold War. *3 credits*

HIST. 118 & 119 Special Topics in European History

(Prerequisite: History 3 & 4) An analysis of selected topics in European internal history. Extensive reading and library work are required. Open to students acquiring special permission from the Department. *6 credits*

HIST. 120 & 121 American Diplomatic History

(Prerequisite: History 1 & 2) The State Department and its relation to other policy-forming agencies of the federal government. Diplomatic activities prior to 1789; the Louisiana Purchase; War of 1812; the Monroe Doctrine; Manifest Destiny. Pan-Americanism, Cuba and the Caribbean, World War I; problems in the inter-bellum period; today's challenges and attempted solutions. United Nations Organization. *6 credits*

HIST. 122 & 123 American Constitutional and Legal History

(Prerequisite: History 1 & 2) The juridical concepts of the colonial and revolutionary periods; backgrounds of the Federal Convention; the nature of the Constitution, its interpretation by Marshall and Taney. The constitutional problems occasioned by the Civil War; the new amendments; the role of the States in a Federalist system. Key cases will be analyzed in detail and set in their proper historical perpective. *6 credits*

HIST. 124 & 125 American Political and Social Thought

(Prerequisite: History 1 & 2) An inquiry into the major philosophies which helped shape our institutions. Puritan concepts; views of the Independents; pre-Revolutionary society and thought and the notion of independence; the Constitution as it represents a compromise between the conservative and liberal traditions; Jeffersonian and Jacksonian democracy; social, economic, and political ramifications of the slavery question. Triumph of the nationalist view; recent tendencies; liberty in American society. *6 credits*

HIST. 126 & 127 American Civilization

(Prerequisite: History 1 & 2) An analysis of leading economic, social and cultural aspects of American life. The economic, religious and intellectual bases of colonial American life; impact of the Revolution; sectional differences; growth of democracy and the reform movements. The growth of industry, agriculture and the agrarian discontent; the disappearance of the frontier; labor and immigration; literature and the arts; religious tendencies, diffusion of knowledge. *6 credits*

HIST. 128 & 129 Special Topics in American History

An analysis of selected topics in American political internal history from the Colonial Period to the end of the Nineteenth Century. Extensive readings are required. Restricted to History Majors. *6 credits*

HIST. 130 & 131 Twentieth Century United States

(Prerequisite: History 1 & 2) An intensive study of American development from 1900 to the present. Stress will be placed on the Roosevelt Era and its Progressivism, Wilson's New Freedom, diplomacy of the First World War, the return to "normalcy," the Great Depression and the New Deal, Roosevelt and world politics, and origins and consequences of World War II. *6 credits*

HIST. 132 Co-ordinating Seminar

Intensive readings and reports on selected problems in American history. In all discussions an attempt will be made to integrate information in such terms as will give a unified picture of American life and institutions. Open only to senior History majors or by special permission of the Chairman of the Department. *3 credits*

HIST. 150 & 151 Russian History

(Prerequisite: History 3 & 4) From the crystallization of political forms in the 9th Century through the Kievan State, Rise of Muscovy, Empire, Revolution of 1917 and the U.S.S.R. to the end of World War II. A critical analysis of the political, cultural, spiritual and psychological factors in Russian History. *6 credits*

HIST. 161 & 162 Latin American History

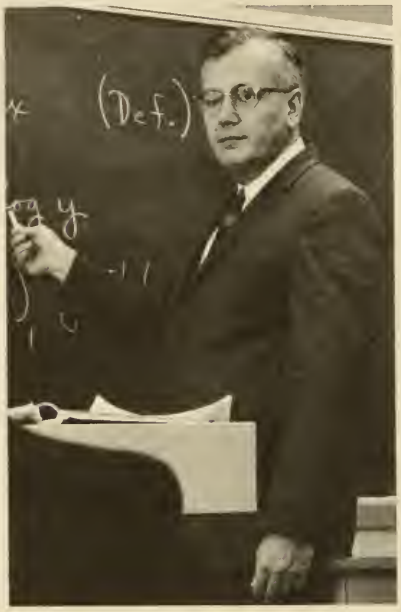
(Prerequsite: History 1 & 2; 3 & 4) Pre-Colombian America; the Spanish and Portuguese colonial era, developments to the early Nineteenth Century. The Latin American Republics, Castroism, The Alliance for Progress, with special stress on inter-American problems. *6 credits*

HIST. 191 & 192 Senior Tutorial

A tutorial program open only to senior Honors students majoring in History. The course involves the preparation of a special project which is reported in writing and defended orally before the faculty of the department. *Variable credit*

DEPARTMENT OF MATHEMATICS

Mr. Bartley, *Chairman*



For the Arts and Social Science students the objectives of the department are: 1. to train the students in the basic and necessary skills of mathematics which will be required in non-technical pursuits; 2. to bring out the cultural and applied values of mathematics; and 3. to show the dependence of other branches of knowledge on mathematics. In addition, in the instruction of engineering and science students for whom mathematics is a tool subject, the objectives of the department are: 1. to develop skill and accuracy in mathematical operations; and 2. to familiarize the students with the methods of mathematical analysis. Finally, for those students who show special aptitude for mathematics it is the objective of the department to prepare them to pursue advanced work in this field.

A student may major in mathematics either in the A.B. sequence or the B.S. sequence. The requirements for a major within the A.B. sequence include the following courses: Mathematics 13-14; 21-22; 101 plus twelve additional upper division credits in mathematics.

The requirements for a major in mathematics within the B.S. sequence include Physics 11-12; 21; 24; Mathematics 14; 21-22; 101 plus twenty-four additional upper-division credits in mathematics.

Students who have taken advanced work in high school covering the matter presented in Mathematics 13-14 may be advanced either one semester or a whole year on the basis of a qualifying examination given by the University. For advancement beyond this, the student must take the Advanced Placement Examination in Mathematics administered by the College Entrance Examination Board.

MATH. 7 & 8 Fundamentals of Mathematics

A course devoted to a mature treatment of the nature of mathematics. *6 credits*

MATH. 13 Freshman Mathematics

An intensified course covering the topics of algebra and trigonometry. *4 credits*

MATH. 14 Introduction to Analysis

The beginning of a twelve credit sequence covering the topics of analysis. *4 credits*

MATH. 21 & 22 Analysis

(Prerequisite: Mathematics 14, or equivalent) An integrated course covering the topics of calculus using modern methods. *8 credits*

MATH. 31 Statistical Mathematics

A course designed to present fundamental concepts necessary in business statistics. (Open to students in Business Administration only.) *4 credits*

MATH. 91 & 92 Guided Independent Study

A tutorial program open to junior Honors students only. Content determined by mentor. Maximum enrollment 3 students. *Variable credit*

MATH. 100 Intermediate Analysis

(Prerequisite: Mathematics 22) A rigorous treatment of sequences, series, and functions of several variables using the concepts of topology. *3 credits*

MATH. 101 Differential Equations

(Prerequisite: Mathematics 22) A treatment of ordinary differential equations with applications. *4 credits*

MATH. 102 Vector Analysis

(Prerequisite: Math. 22) The theory of vectors and their applications to the solution of mathematical and physical problems. *3 credits*

MATH. 103 Advanced Differential Equations
(Prerequisite: Mathematics 101) The treatment of special differential equations and partial differential equations and their applications. *3 credits*

MATH. 104 Statistical Analysis
(Prerequisite: Mathematics 22) Curve plotting, frequency curves, averages, measures of dispersion, theory of correlation. Applications to the natural and social sciences. *3 credits*

MATH. 105 History of Mathematics
(Prerequisite: Mathematics 22) Treats of the development of mathematics from earliest times through the calculus. *3 credits*

MATH. 106 & 107 Advanced Analysis
A continuation of the calculus beyond infinite series. It will include implicit function theory, Fourier series, gamma functions, Bessel functions, Laplace transformations, complex variables, and calculus of variations. *6 credits*

MATH. 108 Modern Algebra
(Prerequisite: Mathematics 22 or permission of department head) Fundamental ideas and properties of groups, rings, fields, polynomials over a field. *3 credits*

MATH. 110 Applied Mathematics
(Prerequisite: Mathematics 101) This course covers advanced differential equations. Fourier series, Laplace transformations, vector analysis, and boundary value problems. *4 credits*

MATH. 111 Linear Algebra
(Prerequisite: Mathematics 108) Vectors, n-dimensional vector space. Determinants, matrices. Transformations, quadratic forms and applications in 3-space. *3 credits*

MATH. 113 & 114 Mathematics Seminar
(Permission of the department head required) Designed to allow the student of demonstrated ability to cover modern developments of algebra and analysis without benefit of formal lectures. *Variable credit*

MATH. 115 Thesis
(Prerequisite: 24 credits in mathematics) A student's results of the investigation of a specific mathematical topic. *Variable credit*

MATH. 191 & 192 Senior Tutorial
A tutorial program open only to senior Honors students majoring in mathematics. The course involves the preparation of a special project which is reported in writing and defended orally before the faculty of the department. *Variable credit*

Console and main unit — Burroughs 205 Computer.

DEPARTMENT OF MILITARY SCIENCE

Col. Lawhon, *Chairman*

The primary objective of the ROTC program is to produce junior officers who, by their education, training and inherent qualities, are suitable for continued development as Regular or Reserve Officers in the United States Army.

All physically qualified, non-veteran students regularly enrolled in the University, except those excused from the requirements by the President of the University, are required to complete the first two years, the Basic Course, of the ROTC program.

Enrollment in the Advanced Course is elective and selective. On successful completion of The Advanced Course, which includes a six week ROTC summer camp at the end of the Junior year, and upon graduation from the University, the cadet is offered a Regular Army or a Reserve Commission. The commissions offered may be in any branch of the Army, based on the student's choice, his educational background, and the needs of the service.

Uniforms and textbooks are supplied without cost to Military Science students and there are no tuition charges for these credit hours. In addition, each Advanced Course student not participating in either ROTC scholarship program is paid approximately $40 per month while in school and $156.95 per month, plus travel expenses, while at Summer Camp.

The Army has recently initiated a Scholarship Program (see p. 28) designed to offer financial assistance to outstanding young men in the four year Army ROTC program who are interested in the Army as a career. Each Scholarship provides for free tuition, textbooks and laboratory fees in addition to paying a subsistence allowance of $50 per month for the period the Scholarship is in effect. Students who volunteer for Advanced ROTC training, if selected by the President of the University and the Professor of Military Science, may apply for the two year scholarship program.

M. S. 13 First Year Basic, General Military Science

Organization of the Army and ROTC; individual weapons and marksmanship; United States Army and National Security; school of the soldier and exercise of command; map and aerial photograph reading. *3 credits*

M. S. 23 Second Year Basic, General Military Science

American military history; introduction to operations and basic tactics; school of the soldier and exercise of command, leadership laboratory. *3 credits*

M. S. 101 & 102 First Year Advanced, General Military Science

(Prerequisite: Military Science 11-12, 21-22, or the equivalent) Leadership; military teaching principles; branches of the Army; small unit tactics and communications; ROTC summer camp orientation; school of the soldier and exercise of command. *6 credits*

M. S. 110 & 111 Second Year Advanced, General Military Science

(Prerequisite: Military Science 101-102) Operations; logistics; Army administration; military law; the role of the United States in world affairs; service orientation; school of the soldier and exercise of command. *6 credits*

NOTE: Credits for M.S. 101-102 and M.S. 110-11 *may not* be substituted for the minimum requirements for minor or open electives as set forth in the various degree programs.

DEPARTMENT OF MODERN LANGUAGES

Mr. Cimini, *Chairman*

Courses in Modern Languages undertake: 1. to give the student the requisite skills in reading, writing, and speaking foreign languages; 2. to train the student in logic and precision of thought and expression through a comparative study of his own and a foreign language; 3. to develop the student's aesthetic appreciation and critical ability through reading of the best foreign authors; 4. to give an insight into the evolution of European thought, history and culture as reflected in literature.

The College Entrance Examination Board Achievement Tests are used as a placement instrument for students who have had two years or more of a modern foreign language in high school. Placement in the intermediate course or the elementary course will depend on these test scores. Students who must take the elementary course in freshman year will receive no college credit and must attend Summer school before sophomore year to make up their deficiency.

A major in a modern foreign language requires the completion of the intermediate course plus twenty-four (24) credits in upper division courses.

FRENCH

FRENCH 1 & 2 Elementary French

A course designed to impart a good basic foundation in comprehending, speaking, reading, and writing of the French language. *6 credits*

FRENCH 23 & 24 Intermediate French

A course designed to give greater scope and depth to the student's knowledge of the French language, and an introduction to French civilization and literature. *6 credits*

FRENCH 91 & 92 Guided Independent Study

A tutorial program open to junior Honors students only. Content determined by mentor. Maximum enrollment 3 students. *Variable credit*

FRENCH 101 & 102 Advanced French Composition and Conversation

An intensive course in French composition and conversation with emphasis on written expression and translation. *6 credits*

FRENCH 103 & 104 Survey of French Literature

A survey of French literature from the *Chanson de Roland* to the contemporary period. *6 credits*

FRENCH 105 French Literature of the Middle Ages

A study of Old French literature from the *Chansons de geste* to the advent of the Renaissance. *3 credits*

FRENCH 106 French Literature of the XVIth Century

A study of French prose and poetry, with emphasis given to such writers as Rabelais, Marot, Ronsard, Dubellay. *3 credits*

FRENCH 107 French Literature of the XVIIth Century

A survey of French literary and philosophical expression from 1610 to 1715. *3 credits*

FRENCH 108 French Literature of the XVIIIth Century

The course of the French Enlightenment from the libertins to the Revolution. *3 credits*

FRENCH 109 The French Novel of the XIXth Century

The emergence of the novel as a literary genre in 19th Century France. *3 credits*

FRENCH 110 French Poetry of the XIXth Century

A study of representative French poets from Chenier to Mallarme. *3 credits*

FRENCH 111 The French Novel of the XXth Century

Survey and study of important novelists from the Dreyfus Affair until today. *3 credits*

FRENCH 112 Modern French Theater

A study of selected plays and trends of the French theater from Antoine's *Theatre libre* until the present day. *3 credits*

FRENCH 191 & 192 Senior Tutorial
A tutorial program open only to senior Honors students majoring in French. The course involves the preparation of a special project which is reported in writing and defended orally before the faculty of the department. *Variable credit*

GERMAN

GERM. 1 & 2 Elementary German
A complete course in the fundamentals of the German language. Emphasis on reading of graded texts, with written, oral and aural exercises. *6 credits*

GERM. 23 & 24 Intermediate German
(Prerequisite: German 1-2 or equivalent) Reading from modern authors of moderate difficulty. Oral and written exercises. Systematic review of German grammar. *6 credits*

GERM. 91 & 92 Guided Independent Study
A tutorial program open to junior Honors students only. Content determined by mentor. Maximum enrollment 3 students. *Variable credit*

GERM. 101 & 102 Survey of German Literature
A survey of German literature from the eleventh century to the contemporary period, with special emphasis on the main intellectual currents as well as the social and political developments. Collateral reading of representative works by important authors. *6 credits*

GERM. 103 & 104 Medieval Literature
A study of German literature from the eleventh century to the Reformation. Collateral reading in modern German of important authors. Discussion, written and oral reports. *6 credits*

GERM. 105 The Age of Frederick the Great
The study of German literature in the Age of Enlightenment. Reading and interpretation of representative poets and critics; e.g., Gottsched, Lessing, Herder, Klopstock. *3 credits*

GERM. 106 Goethe and the Weimar Circle
A study of the "Sturm und Drang" and the classical reaction. Reading and interpretation of Goethe's *Faust* (Pt. I and selections of Pt. II), *Iphigenie,* Schiller's *Wilhelm Tell,* etc. Oral and written reports. *3 credits*

GERM. 107 XIX Century Literature
German literature in the "Liberal Age". Selected readings in drama, poetry and short story, written reports on representative novels. *3 credits*

GERM. 108 XX Century Literature
A study of the principal trends in contemporary German literature. Selected readings in prose and poetry, written reports on selected novels and important critical works. *3 credits*

GERM. 109 History of the German Language
(Prerequisite: Germ. 123-24) Historical survey of German language and its relations with other Indo-European langauges, particularly with English. Brief introduction to comparative linguistics. *3 credits*

GERM. 110 Survey of German Civilization
(Prerequisite: Germ. 123-24) Selected readings of representative essays by major philosophers, scientists, historians and related self-analysis by major writers. Discussions, oral and written reports. *3 credits*

GERM. 123 & 124 Advanced German
Selected texts in prose and poetry. Advanced practice in conversation and composition. *6 credits*

GERM. 191 & 192 Senior Tutorial
A tutorial program open only to senior Honors students majoring in German. The course involves the preparation of a special project which is reported in writing and defended orally before the faculty of the department. *Variable credit*

SPANISH

SPAN. 1 & 2 Elementary Spanish
Fundamentals of grammar, drill in pronunciation, conversation, easy readings and written exercises. *6 credits*

SPAN. 23 & 24 Intermediate Spanish
(Prerequisite: Span. 1-2 or equivalent) Grammatical review, written and oral composition. Selected cultural readings of intermediate difficulty. *6 credits*

SPAN. 91 & 92 Guided Independent Study
A tutorial program open to sophomore and junior Honors students only. Content determined by mentor. Maximum enrollment 3 students. *Variable credit*

SPAN. 101 & 102 Advanced Composition and Conversation
A thorough study of Spanish grammar; composition, oral and written, with aim of developing ability to write clear and fluent Spanish. Practice in oral composition. *6 credits*

SPAN. 103 & 104 Survey of Spanish Civilization
A survey of the political, artistic, literary and scientific progress of Spain, with readings of each period. *6 credits*

SPAN. 105 & 106 The Golden Age
The development of the novel, with the culmination of all forms in Cervantes; and of the drama, reaching its perfection in De Vega and Calderon. *6 credits*

SPAN. 107 & 108 The Modern Novel
The short story and novel of Spain and Spanish-America in the late 19th and early 20th centuries. Readings of most important authors and works. Lectures and discussions in Spanish. *6 credits*

SPAN. 109 & 110 The Generation of '98
Thorough examination of the movement; its political, historical, and social background: Ganivet, Unamuno, Azorin, etc. *6 credits*

SPAN. 111 & 112 The Novel in Latin America
An examination of the esthetic, cultural, and social aspects of prose fiction in Latin America over the past hundred years, through a study of representative writers. *6 credits*

SPAN. 113 & 114 History of Spanish Literature
Study of Spanish Literature from Cantar de Mio Cid to XX century; with emphasis on main literary currents in each century. Lectures in Spanish. *6 credits*

SPAN. 191 & 192 Senior Tutorial
A tutorial program open only to senior Honors students majoring in Spanish. The course involves the preparation of a special project which is reported in writing and defended orally before the faculty of the department. *Variable credit*

ITALIAN

ITALIAN 1 & 2 Elementary Italian
A course in Italian for beginners. Principles of Italian grammar, drill in pronunciation; conversation and easy readings. *6 credits*

ITALIAN 23 & 24 Intermediate Italian
(Prerequisite: Italian 1 & 2, or equivalent) Selected modern readings of intermediate difficulty. Written and oral composition. *6 credits*

POLISH

POLISH 1 & 2 Elementary Polish
Fundamentals of Polish grammar, reading and composition in modern Polish. *6 credits*

POLISH 23 & 24 Intermediate Polish
(Prerequisite: Polish 1 & 2, or equivalent) The course includes grammatical review, written and oral composition; selected modern readings of intermediate difficulty. *6 credits*

RUSSIAN

RUSSIAN 1 & 2 Elementary Russian
Principles of the grammar of Great Russian. Aim: a speaking and written knowledge of standard Russian by reading, conversation, and written and oral exercises. *6 credits*

RUSSIAN 23 & 24 Intermediate Russian
(Prerequisite: Russian 1-2 or equivalent) Further vocabulary building, review grammar, oral and written exercises and composition, enlarged reading ability based on graded texts and selected modern prose of intermediate difficulty. *6 credits*

The Language Laboratory

DEPARTMENT OF PHILOSOPHY

Father Devlin, S.J., *Chairman*

The University of Scranton requires of all undergraduates a complete program of philosophy as an essential element in its integrated core curriculum of liberal education. The purpose is mainly to introduce the student to the basic problems of man's existence in the universe, to investigate with the aid of intelligence and reasoning alone the origin, nature, value and destiny of the human person and to unfold the fundamental structure within which each person must exercise his freedom individually and socially if he is going to achieve his proper development and happiness as a human being. The means employed in this enterprise are the method and principles of Scholastic philosophy as developed primarily by Plato, Aristotle, St. Augustine and St. Thomas, complemented by cursory reviews of the major insights of other great philosophers of the Western World. In this way the University hopes to prepare every student not only to understand the basic human problems of our time but also, in his own way and in his own chosen field, to make some contribution toward their solution.

All candidates for undergraduate degrees, therefore, must take eighteen hours of Scholastic philosophy in the following sequence: Philosophy 21, 22, 105, 108, 110, 111. Those desiring to major in philosophy must choose in junior and senior year four other courses from the electives listed below for a total number of credits of thirty (30).

PHIL. 21 Philosophy of Being I
The meaning of being, the analogy of being, the intrinsic causes of limited being and becoming, existence and essence, form and matter, substance and accident, act and potency. *3 credits*

PHIL. 22 Philosophy of Being II
(Prerequisite: Philosophy 21) Principles of efficient and final causality. The proof of the existence of God, the ways of knowing God, God's attributes, His action in His creatures, the transcendentals, and the problem of evil. *3 credits*

PHIL. 91 & 92 Guided Independent Study
A tutorial program open to junior Honors students only. Content determined by mentor. Maximum enrollment 3 students. *Variable credit*

PHIL. 105 Philosophy of Man I
(Prerequisite: Philosophy 21-22) The difference between scientific and philosophical knowledge. The unity of man, the philosophy of vegetative life, the nature of knowledge, the nature of a sensing subject, the problem of the origin of known sensible qualities, the structure of internal sensation. *3 credits*

PHIL. 108 Philosophy of Man II
(Prerequisite: Philosophy 105) The nature of intellect and its object, the problem of the origin ideas, the mental word, judgment, knowledge of individuals. The sensory appetites and the will, the nature of human love, necessary and free acts of the will. The human soul and its attributes, relation of soul and body, man's social nature, the human person and intersubjectivity. *3 credits*

PHIL. 110 Philosophy of Human Conduct I
(Prerequisite: Philosophy 105-108) The purpose of human existence and the nature of responsible human action, the standard of moral goodness and evil and moral obligation. The nature and properties of the natural moral law. *3 credits*

PHIL. 111 Philosophy of Human Conduct II
(Prerequisite: Philosophy 110) The moral implications of man's relation to God as the object of religion and to himself as a being equipped with a variety of powers. Man as a social being, the societal character of marriage and civil society. The principles of morality for the various professional and industrial fields. *3 credits*

PHIL. 113 Ancient Philosophy
The Pre-Socratics: influences of the Orphic religions, of the empirical investigations of the Milesians. The Pythagoreans, Heracleitus, Parmenides, Empedocles, Anaxagoras, the Atomists. The Sophists and Socrates. Plato: method and the doctrine of the Forms, ethical and metaphysical value of the Forms. Aristotle: technical advances in method, Physics and Metaphysics. The Stoics and Epicureans, the Sceptics, Neo-Platonism and Plotinus. *3 credits*

PHIL. 114 Medieval Philosophy

Lecture and seminar techniques are used to introduce the student to the basic philosophical concepts of medieval thinkers. The positions of the following are treated in some detail: St. Augustine, Boethius, John Scotus Erigena, St. Anselm, St. Bonaventure, St. Albert the Great, John Duns Scotus and William of Ockham. *3 credits*

PHIL. 115 Logic

An introduction to the logic of Aristotle as developed by the Stoics and the Scholastics. The difference between idea and term, kinds of ideas and terms, judgment and the proposition, reasoning: its different kinds and governing rules, fallacies. *3 credits*

PHIL. 116 Epistemology

The epistemological problem, its nature and origin. Fonts of knowledge, truth and certitude. Major epistemological theories in modern and current philosophy. *3 credits*

PHIL. 118 American Pragmatism

An introduction to the origin and nature of American Pragmatism; its European roots, Charles Sanders Pierce, William James, John Dewey. The influence of pragmatism on American thought and pragmatism as an expression of the American character. *3 credits*

PHIL. 119 Philosophy of Science

Seminar techniques are used to introduce the student to the fundamental ideas and current research in the philosophy of science. The guiding concept is the meaning of the modern scientific method. To pinpoint this method papers of the following are carefully analysed: Wright, Hempel, Oppenheim, Mill, La Place, Venn, Carnap, Ayer, Peirce, Strawson, Russell, Cassirer and Dewey. *3 credits*

PHIL. 120 Philosophy of Beauty and Art

Objective form and beauty, subjective feeling and the distinction of the aesthetic from the beautiful, the *'a priori* of feeling' and the aesthetical form of 'purposiveness', the notion of 'symbol'. In the historical development special attention will be paid to Plato, Aristotle, Lessing, Kant, Schelling, Hegel and certain contemporary articles on the theory of art as symbolic expression. *3 credits*

PHIL. 121 Modern Philosophy I

The Renaissance Background: Petrarch and the humanist movement; Galileo and the beginnings of modern science. Descartes: *mathesis universalis;* the difficulties of the Cartesian method; solution in the one substance of Spinoza. British Empiricism: Locke and the problem of substance; Berkeley's *'Esse est percipi';* culmination in Hume and the doctrine of perceptual atomism. *3 credits*

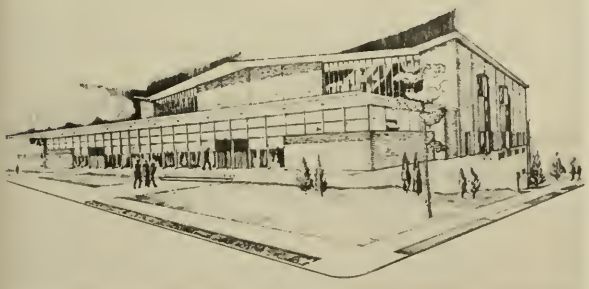
PHIL. 122 Modern Philosophy II

Leibniz: Cartesian and Spinozistic heritage; the problem of universal science; the *Monodology.* Kant: influences of Leibniz, Hume and Newton; the "Copernican revolution" and 'Transcendental Criticism'. Fichte's transcendental idealism and Schelling's absolute idealism. Hegel and *Phenomenology of Mind;* reality as dialectical. Survey of later trends: Schopenhauer, Nietzche, Bergson. *3 credits*

PHIL. 191 & 192 Senior Tutorial

A tutorial program open only to senior Honors students majoring in Philosophy. The course involves the preparation of a special project which is reported in writing and defended orally before the faculty of the department. *Variable credit*

DEPARTMENT OF PHYSICAL EDUCATION



Physical Educational Building

Beginning with the September 1967 semester, credit courses in Physical Education will be introduced as an integral part of the college curriculum. While detailed courses will be specified in the 1967-1968 bulletin, students are hereby informed that the Physical Education courses will be required for the baccalaureate degree and are obligatory for all Freshmen and Sophomores.

DEPARTMENT OF PHYSICS

Dr. Harper, *Chairman*

The science of physics is concerned principally with matter and energy, the nature of each, and with their interactions. It is the fundamental science for most branches of engineering and has innumerable applications in medicine, industry and everyday life. The objectives of the Department of Physics are: 1. to impart knowledge of the general principles of physical science and to show applications to human problems; 2. to train the student in logical and accurate methods of observation, measurement and analysis; 3. to provide adequate training in the fundamentals of physics as a basis for medical, engineering and other courses of study; 4. to encourage those students with exceptional aptitude to pursue graduate work in physics.

PHYS. 1 & 2 General Physics

(Prerequisite: Mathematics 13-14) General college course for pre-medical, pre-dental and other students. Mechanics and heat, electricity and magnetism, sound and light. Three hours lecture and recitation and two hours laboratory. *8 credits*

PHYS. 3 Foundations of Physical Science

(Prerequisites: Mathematics 7-8) The course treats of the basic laws and concepts of physical science, of the applications in modern life, and of the influence of physical science on our understanding of the physical world. For non-science students. Three hours lecture with demonstrations.

PHYS. 4 Elements of Geophysics

A general college course of elementary geophysics for non-science majors treating the topics of: Matter and Energy; the Earth as a Planet; the Lithosphere; the Hydrosphere; the Atmosphere. Three hours lecture and recitation with demonstrations. *3 credits*

PHYS. 11 & 12 Elements of Physics

(Corequisite: Mathematics 14-21) Basic college course, employing methods of the calculus, for physics, electronics, mathematics, and chemistry majors. Mechanics and heat, sound, light, electricity and magnetism. Three hours lecture and recitation and two hours laboratory. *8 credits*

PHYS. 18 Elementary Mechanics

(Prerequisite: Mathematics 13) Elementary treatment of statics and dynamics of particles, rigid and elastic bodies, and fluids. For engineering students. Three hours lecture and recitation and two hours laboratory. *4 credits*

PHYS. 19 Elementary Heat, Light and Sound

(Prerequisite: Physics 18) Basic treatment of heat phenomena and thermodynamics; periodic motions, vibrations and sound waves; geometrical and physical optics. For engineering students. Three hours lecture and recitation and two hours laboratory. *4 credits*

PHYS. 20 Elementary Electricity and Magnetism

(Prerequisite: Physics 18; Mathematics 21) Basic treatment of electrostatics, direct and alternating currents and circuits, introductory electronics and atomic physics. For engineering students. Three hours lecture and recitation and two hours laboratory. *4 credits*

PHYS. 21 Elements of Modern Physics

(Prerequisite: Physics 12) Introductory Modern Physics course for physics and electronics majors; also recommended for other science students. Review of classical physics; introduction to atomic and nuclear physics. Three hours lecture and recitation and two hours laboratory. *4 credits*

PHYS. 22 Heat and Thermodynamics

(Prerequisites: Physics 12 or 19, Mathematics 22) Intermediate course treating conduction, convection and radiation; thermodynamic laws, entropy, thermodynamic cycles, practical applications; kinetic and statistical theory of gases. Recommended for physics majors. Three hours lecture. *3 credits*

PHYS. 24 Circuit Analysis

(Prerequisites: Physics 21 and Mathematics 22) Intermediate course treating Kirchhoff's Laws, resistance networks, steady state and transient conditions in RC, RL and RLC networks, Thevenin's and Norton's theorems, and electronic devices and their equivalent circuits. Three hours lecture and two hours laboratory per week. *4 credits*

PHYS. 25 Radiation Science

(Prerequisites: Mathematics 13-14, Chemistry 1-2, Physics 1-2, or equivalent) Fundamental course for science majors, engineering students and others

covering the nature of matter, radioactivity, radiation detection, energy measurement and radiological safety procedures. Two lecture periods and one three-hour laboratory per week. *3 credits*

PHYS. 91 & 92 Guided Independent Study

A tutorial program open to Junior Honors students only. Content determined by mentor. Suggested topics for consideration: particle statistics; solid state physics; quantum theory and electronic structure of atoms; nuclear energy. Enrollment limited to 3 students. *Variable credit*

PHYS. 102 Mechanics

(Prerequisites: Physics 21; Mathematics 101) Introduction to theoretical mechanics treating statics and dynamics of particles and extended bodies; motion of bodies by conservative and dissipative forces; energy relations; generalized coordinates and Lagrange's equations. Recommended for physics majors. Three hours lecture. *3 credits*

PHYS. 103 Physical Optics and Waves

(Prerequisites: Physics 21; Mathematics 101) Intermediate introduction to plane and spherical wave equations, standing waves, interference, Fraunhofer and Fresnel diffraction, polarization, and the applications of these topics to electromagnetic and acoustic waves. Three hours lecture and two hours laboratory. *4 credits*

PHYS. 104 Electricity and Magnetism I

(Prerequisites: Physics 21; Mathematics 101 may be taken concurrently) Analytical treatment of electrical and magnetic theory; electrostatic fields; direct currents and circuits; measurements; magnetism. Required of physics majors. Three hours lecture and two hours laboratory. *4 credits*

PHYS. 105 Electricity and Magnetism II

(Prerequisites: Physics 104; Mathematics 101) Electromagnetic induction, circuit transients, alternating current circuits; measurements; electromagnetic fields and waves. Required of physics majors. Three hours lecture and two hours laboratory. *4 credits*

PHYS. 106 Electronic Principles and Circuits I

(Prerequisites: Physics 12, or 20, 24; Mathematics 22) General principles of electronic vacuum tubes and semiconductor devices; diodes and rectifiers; tube and transistor operation, characteristics; equivalent circuits; basic amplifier circuits. Required of electronics majors and recommended for physics majors. Three hours lecture and two hours laboratory. *4 credits*

PHYS. 107 Electronic Principles and Circuits II

(Prerequisite: Physics 106) General analysis of vacuum tube and transistor electronic amplifiers including broad and narrow band types; power amplification; power supplies; modulation and demodulation. Three hours lecture and two hours laboratory. *4 credits*

PHYS. 108 Advanced Electronics

(Prerequisites: Physics 107 & 116, and Mathematics 101) An extension of the basic electronic courses treating additional vacuum tube and transistor circuits and systems such as oscillators and signal generators, various special purpose circuits and basic analog and digital computer circuits operations. Three hours lecture and two hours laboratory. *4 credits*

PHYS. 109 High Frequency Electromagnetic Waves

(Prerequisites: Physics 108 & Mathematics 110) Electromagnetic wave theory; transmission line and wave guide theory; transmission and measurement of ultra-high frequency signals; microwave tubes and signal generators; transmission, reception and measurement of microwave signals. Three hours lecture and two hours laboratory. Required of electronics majors. *4 credits*

PHYS. 111 Nuclear Physics

(Prerequisites: Physics 21 and 102; Mathematics 101) The study of nuclear models and force theories. Natural and induced radioactivity, theory and measurement of alpha, beta and gamma decay; nuclear reactions including fission and fusion. Three hours lecture. Required of physics majors. *3 credits*

PHYS. 114 Advanced Physics Laboratory I

(Prerequisite: Physics 21) Study and use of devices and techniques for the quantitative measurements of heat, light, electron characteristics and other physical phenomena. Required of physics majors. One three-hour laboratory. *1 credit*

PHYS. 115 Advanced Physics Laboratory II

(Prerequisites: Physics 111 and 114; the former may be taken concurrently) Measurement and analysis of nuclear radiations; detection and identification of rays and particles; energy measurements; neutron induced radioactivity; radiation protection. For physics majors. One three-hour laboratory. *1 credit*

PHYS. 116 Introduction to Electromagnetics

(Prerequisites: Physics 12 or 20 and 24; Mathematics 22) Intermediate electricity and magnetism course for electronics majors covering electrostatic and magnetic fields; direct and alternating currents; Maxwell's equations and electromagnetic waves. Required of electronics majors. Three hours lecture and two hours laboratory. *4 credits*

PHYS. 120 Undergraduate Physics Thesis

(Prerequisites: 24 credits in physics; 20 credits in mathematics) Recommended for senior physics majors; for the purpose of evaluating the student's capacity for individual study and research on a specific physical problem. Assignment of problem to be arranged with the department Chairman. *1 credit*

PHYS. 121 Undergraduate Physics Research

Recommended for Senior Physics and Electronics students who pursue a specific physical research project to gain experience with research literature, techniques and equipment. Projects are recommended by members of the department and approved by the Chairman. *Variable credit*

PHYS. 123 Advanced Mechanics

(Prerequisite: Physics 102) Variational principles and LaGrange's equations. Euler's equations of motion; Hamilton's equations of motion; canonical transformations; Hamilton-Jacobi theory. Recommended for physics majors. *3 credits*

PHYS. 191 & 192 Senior Tutorial

A tutorial program open only to senior Honors students majoring in Physics. The course involves the preparation of a special project which is reported in writing and defended orally before the faculty of the department. *Variable credit*

Magnetic tape storage unit for University computer.

DEPARTMENT OF POLITICAL SCIENCE

Mr. Brown, *Chairman*

For the Political Science major the Department aims to accomplish the following objectives: 1. to give the student a thorough understanding of the nature and purposes of civil society; 2. to impart a sound knowledge of the philosophical basis of democracy; 3. to enable him to appreciate the problems of his own government at work; and 4. to relate the American system to the governments of other states in the international community.

For the Political Science major History 1-2; 3-4; Political Science 101-102 plus eighteen (18) credit hours from upper division courses are required.

POL. SCI. 91 & 92 Guided Independent Study

A tutorial program open to junior Honors students only. Content determined by mentor. Maximum enrollment 3 students. *Variable credit*

POL. SCI. 101 & 102 American National Government

(Prerequisite: History 1 & 2) An analysis of society, state, authority and common good. Forms of government. The constitution, federalism, structure, operations and functions of the three branches. *6 credits*

POL. SCI. 105 State Government

The natural constitutional position of the states and the changing federal-state relationships. State governments in actual operation. Emphasis on Pennsylvania and actual problems of procedure and policy. *3 credits*

POL. SCI. 106 Local Government

Types and evolution of local government; constitutional and statutory limitations; functions of divisions; structure and operation. *3 credits*

POL. SCI. 107 Public Administration

Nature of public administration; structures and statutory limitations; staff organization and flow of command; employment policies, personnel training and management; employee organization; public relations. *3 credits*

POL. SCI. 111 International Relations

An examination of the League of Nations, United Nations and America's role in the international community. *3 credits*

POL. SCI. 114 Western Political Thought

The role of the state, its auxiliary agencies and functions as viewed by political philosophers from Plato to Marx. *3 credits*

POL. SCI. 120 & 121 American Foreign Relations

This course is identical with History 120-121. *6 credits*

POL. SCI. 122 & 123 American Constitutional and Legal History

(Prerequisite: History 1 & 2) This course is identical with History 122-123. *6 credits*

POL. SCI. 124 & 125 American Political and Social Thought

(Prerequisite: History 1 & 2) This course is identical with History 124-125. *6 credits*

POL. SCI. 126 The Political Parties of the United States

(Prerequisite: History 1 & 2) The origins, nature and functions of parties under our American system of government. *3 credits*

POL. SCI. 134 & 135 Comparative Government

A detailed, comprehensive and balanced study of the politics and government of Great Britain, France, Germany, Italy, and the U.S.S.R. in comparison with and contrast to the Institutions of the United States of America. *6 credits*

POL. SCI. 140 Geopolitics

(Prerequisites: History 1-2 and History 3-4) A study of geographic factors on World History. Geographic factors in national power and international relations; an analysis of the role of "Geopolitics" with special reference to the current world scene. *3 credits*

POL. SCI. 191 & 192 Senior Tutorial

A program open only to senior Honors students majoring in Political Science. The course involves the preparation of a special project which is reported in writing and defended orally before the faculty of the department. *Variable credit*

DEPARTMENT OF PSYCHOLOGY

Dr. Lennon, *Chairman*

The faculty in Psychology seeks to: 1. prepare the student in psychology with a basic, systematic knowledge of method and content from experimental psychology; 2. provide the student of exceptional aptitude with scholarly learning experiences in preparation for successful graduate study; 3. complement the offerings of other departments with courses of value to general education or of worth to the specific majors of these departments.

The student majoring in psychology will complete thirty semester hours of courses as follows: Psychology 21-22, 120, 125, 128, 129, 130, 131, 132 and 133.

PSYCH. 21 & 22 General Experimental Psychology

The basic concepts of experimental psychology, emphasizing facts, principles and methods, data gathering and study. 2 hours lecture and 2 hours laboratory. *6 credits*

PSYCH. 91 & 92 Guided Independent Study

A tutorial program open to junior Honors students only. Content determined by mentor. Maximum enrollment 3 students. *Variable credit*

PSYCH. 120 History of Psychology

(Prerequisites: Psychology 21-22) The more important theoretical systems, experiments and personalities in the development of modern psychology as a science. *3 credits*

PSYCH. 125 Personality

A study of dynamic factors in personality development. The relationships among abnormal and normal modes of adjustment are considered in terms of personality theory, measurement and research. *6 credits*

PSYCH. 126 Social Psychology

(Prerequisite: Psychology 21-22) Social aspects of personality; the development and manifestations of social awareness; suggestion, imitation, group behavior, and the individual mechanisms of social adjustment. *3 credits*

PSYCH. 127 Industrial Psychology

The principles and techniques in selection and management; job analysis; occupational descriptions; employment procedures; interviews, tests, inventories, counseling; industrial training, promotions, transfers, prevention of accidents; management employee relations. *3 credits*

PSYCH. 129 Psychological Statistics I

Descriptive statistics, probability, correlation, sampling, signification, chi square and simple analysis of variance. *3 credits*

PSYCH. 130 Senior Seminar in Psychology

Extensive out-of-class reading assignments, class reports and discussions of pertinent issues in contemporary psychology which cut across course boundaries. (For senior psychology majors). *3 credits*

PSYCH. 131 Psychological Testing

(Prerequisites: Psychology 21-22, 129) Provides a thorough grounding in principles of testing and measurement; introduces the student to tests of general scholastic ability, special abilities, tests of proficiency, interests and personality. *3 credits*

PSYCH. 133 Psychology of Development
Psychological phases of human development throughout the life span with emphasis upon the behavioral importance of childhood; implications for education and counseling; for home and society. *3 credits*

PSYCH. 191 & 192 Senior Tutorial
A tutorial program open only to senior Honors students majoring in Psychology. The course involves the preparation of a special project which is reported in writing and defended orally before the faculty of the department. *Variable credit*

Polar planimeter for measurement of areas in Calculus

DEPARTMENT OF SOCIOLOGY

Mr. Baldi, *Chairman*

Courses in Sociology seek to provide the terminal student and the prospective graduate student with a basic understanding of the forces which are part of the structure of society; to provide a pre-professional orientation to the field of Social Work.

A major in sociology shall consist of Sociology 21 and 22, plus twenty-four (24) elective credits in Sociology. Certain psychology courses may be substituted for some of these elective credits with the authorization of the Chairman of the Department.

SOC. 21 Basic Sociology

Basic sociological principles covering the basis, structure, and functions of society. Man's biological and cultural heritage and his social nature, demography, ecology, types of communities; the social processes and their relationship to social control, the family, economic, governmental and religious institutions. *3 credits*

SOC. 22 Social Problems

An analysis of the major social problems affecting modern society. Social legislation bearing on the above, resources for treatment and prevention, and deficiencies in existing programs. *3 credits*

SOC. 91 & 92 Guided Independent Study

A tutorial program open to sophomore and junior Honors students only. Content determined by mentor. Maximum enrollment 3 students.

Variable credit

SOC. 103 Criminology and Penology

Contributions of the various schools to the development of criminology. Physical, psychological and environmental factors in crime. The role of the home, family and social relationships. The methods and instrumentalities of criminal justice, crime prevention. *3 credits*

SOC. 104 Cultural Anthropology

Study and comparison of the learned, shared and transmitted behavior patterns and ideals by which man has worked out his social relations, dealt with his environment and defined his place in the world. *3 credits*

SOC. 105 Sociological Theories

A survey of the development of sociological principles and theories, including a comparison of the modern major schools of thought such as the mechanistic, geographical, demographic, biological, economic, sociologistic and integrative.

3 credits

SOC. 106 Community Organization

A general introduction to the field and process of community organization, both as a field of social work, and as a field of human endeavor. The co-ordination and financing of welfare activities, methods of appraising community needs and resources, planning and the initiation of welfare services. Services of a voluntary and governmental nature will also be discussed. *3 credits*

SOC. 107 Child Welfare

Development of child welfare in the United States. Educational, health, recreational and child labor regulations. Study and treatment of children in their own homes, foster homes and institutions. Child care and protective programs on Federal, State and local level. *3 credits*

SOC. 109 The Field of Social Work

Growth of social work as a professional endeavor. The scope of social work; case work in the medical, psychiatric, family and child welfare and guidance field; community organization as exemplified in the community chest and council, social research, social planning, social group work. Current trends in social work. *3 credits*

SOC. 110 Marriage and Family Life

The major focus of attention will be given to the preparation for marriage, selection of a partner, financing the marriage, harmonies and discords in the marriage, problems of parenthood and family administration, successful and happy marriage and family union. Restricted to seniors. *3 credits*

SOC. 111 Urban Sociology

A sociological analysis of the development and effects of modern urbanization on human institutions, population trends and social relationships. The interrelationships, form, structure and organized life in cities, patterns of urban structure and

cities of the future. The role of politics, social agencies and elements making for organization and disorganization. Urban planning and redevelopment. *3 credits*

SOC. 112 Methods and Techniques of Social Research

Methods of obtaining, recording, interpreting, and publishing research materials; the use and interpretation of statistical procedures. *3 credits*

SOC. 113 Juvenile Delinquency

Juvenile delinquency as a social problem. Methods of treatment and prevention, including juvenile courts, clinics, probation, parole, correctional institutions, child placement and recreational programs. *3 credits*

SOC. 114 American Minority Groups

A study of the cultural background, distribution, assimilation and other adjustments of minority groups; problems arising from the contacts of these people who differ as to race and culture. Prejudice and discrimination as opposed to the democratic ideology will be considered. *3 credits*

SOC. 120 Special Problems

Done on an individual basis. Assigned readings, individual research, informal conferences and written reports. Individual has choice in field of sociological study. Restricted to seniors. *1 credit*

SOC. 191 & 192 Senior Tutorial

A tutorial program open only to senior Honors students majoring in Sociology. The course involves the preparation of a special project which is reported in writing and defended orally before the faculty of the department. *Variable credit*

Debating Team and Trophies

DEPARTMENT OF THEOLOGY

Fr. E. Gallagher, S.J., *Chairman*

The program in theology has been organized upon the fundamental principle that theology is something vital, which must be lived as well as understood. It is not intended to train theologians but rather to form thoroughly enlightened and strongly motivated Catholic gentlemen bent upon attaining their full stature in the Mystical Body of Christ.

THEO. 3 The Christian Revelation

An introduction to Theology through the Old and the New Testament. *3 credits*

THEO. 23 The Whole Christ

Redemption through Christ and His Church. *3 credits*

THEO. 91 & 92 Guided Independent Study

A tutorial program open to junior Honors students only. Content determined by mentor. Maximum enrollment 3 students. *Variable credit*

THEO. 103 The Christian Destiny

Participation through grace in the life of the Trinity on earth and in heaven. *3 credits*

THEO. 113 The Christian Worship

The encounter with Christ through the Liturgy. *3 credits*

Mass in the University Chapel

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Assistant Director of Guidance. B.S., M.S., University of Scranton; Certified Psychologist

Charles J. Buckley,
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Michael J. Loyack,
Executive Secretary of the Alumni Society. B.S., University of Scranton

Donald V. MacDonald,
Dean of Graduate School; Professor of Education. A.B., St. Francis Xavier University; B.S., M.S.;Ph.D., Cornell University

Eugene P. McCreesh, S.J.,
Dean of College of Arts and Sciences. A.B. Ph.L., St. Louis University; S.T.L., Woodstock College

Thomas A. McGoff,
News Director. B.S., University of Scranton

Bernard R. McIlhenny, S.J.,
Director of Admissions. A.B., M.A. Loyola University, Chicago; S.T.B., Woodstock College

* *Pro Deo Et Universitate Award for Twenty Years or More of Service.*

Marianne McTighe, D. Et U.°,
Librarian. B.S., M.A., Marywood College

Mrs. Alice Murphy,
Assistant to the Registrar

Mildred A. Norton, D. Et U.°,
Assistant Librarian, Head of Order Department, B.S., M.S. in L.S., Marywood College

Frank J. O'Hara, D. Et U.°,
Assistant to the President; Director of Alumni Relations. A.B., LL.D., University of Scranton; M.A. LaSalle College

J. Frank Reddington, D. Et U.°,
College Physician. A.B., Holy Cross College; M.D., Georgetown University

Joseph A. Risse,
Engineer, Station WUSV-FM

Joseph A. Rock, S.J.,
Academic Vice President. A.B., M.A., Georgetown University; Ph.L., Woodstock College; S.T.L., Weston College; Ph.D., Georgetown University

Robert T. Ryder, D. Et U.°,
Comptroller. B.S., M.B.A., University of Scranton

Angelina T. Scardamaglia,
Assistant Librarian, Head of Cataloging Department, A.B., B.S. in L.S., M.S. in L.S., Marywood College

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Assistant Professor of Physical Education; Basketball Coach. B.A., Manhattan College

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Eugene J. Ahern, S.J.,
Instructor in Theology. A.B., M.A., Ph.L., St. Louis University; S.T.L., Woodstock College; Cand. Ph.D., Catholic University of America.

Bert Akers, S.J.,
Assistant Professor of Theology. A.B., Ph.L., St. Louis University; S.T.L., S.T.D., Woodstock College

Martin D. Appleton,
Professor of Chemistry. B.S., University of Scranton; M.S., Ph.D., Pennsylvania State University

George V. Babcock, Jr.,
(on leave)
Assistant Professor of Economics. A.B., M.A., Ph.L., Boston College; M.B.A., New York University

Joseph A. Barrett,
Assistant Professor of Education and Psychology. B.S., M.A., University of Scranton; Cand. Ph.D., St. John's University. Certified Psychologist

Edward F. Bartley, D. Et U.°,
Associate Professor and Chairman: Department of Mathematics. A.B., University of Scranton; M.A. Columbia University

Joseph E. Beezup,
Lecturer in Engineering. B.S., Penn State University

John A. Beidler,
Instructor in Mathematics. A.B., King's College; M.A., Lehigh University

Thomas J. Brennan,
Assistant Professor of Sociology. B.A., M.A., St. Bonaventure University

Frank C. Brown, D. Et U.°,
Associate Professor and Chairman, Department of History. A.B., University of Scranton; M.A., Columbia University

Joseph G. Brunner,
Associate Professor of Modern Languages. M.A., B. Eotvos College, Budapest, Hungary; Ph.D., University of Budapest, Hungary.

Francis X. Budovic, S.J.,
Assistant Professor of Modern Languages. Ph.L., University of Trnava, Czechoslovakia; S.T.L., Gregorian University, Rome.

Thomas P. Bukowski,
Instructor in Philosophy. A.B., Canisius College; M.A., University of Toronto

Umbay H. Burti, D. Et U.°,
Assistant Professor and Chairman: Department of Chemistry. B.S., LL.D., University of Scranton

John J. Callaghan,
Associate Professor of Biology. B.S., M.S., University College, University of Cork; Ph.D., Pennsylvania State University

Arnold F. Campo,
Lecturer in Business Administration. Ph.B., University of Santa Clara

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Assistant Professor of Psychology. B.S., University of Scranton; M.Ed., Cand. D.Ed., Pennsylvania State University; Certified Psychologist

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Captain, U.S. Army
Instructor in Military Science. B.S., United States Military Academy

Paul J. Casey, S.J.,
Assistant Professor of Chemistry. B.S., Ph.L., Spring Hill College; S.T.B., Woodstock College; M.S., University of Detroit

Joseph A. Casper, S.J.,
Instructor in English. A.B., M.A., Fordham University

Robert K. Cavanaugh,
Lecturer in English. A.B., University of Scranton; M.A, Seton Hall University

Ambrose G. Charnogursky,
Lecturer in Business Administration. B.S., Cand. M.B.A., University of Scranton

Stanley L. Chickson,
Assistant Professor of Engineering. B.S.C.E., Pennsylvania State University; M.S., Bucknell University

Frank A. Cimini, D. Et U.°,
Assistant Professor and Chairman: Department of Modern Languages. A.B., University of Scranton; M.A., Fordham University

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John J. Clarke,
Lecturer in English. A.B., University of Scranton; M.S., Columbia University; M.A., Fordham University; Ph.D., Brown University

Joseph B. Cullather, D. Et U.°,
Associate Professor of English. A.B., University of Scranton; M.A., University of Alabama

Francis H. Curtis,
Assistant Professor of Education. B.S., M.Ed., D.Ed., Pennsylvania State University

Ralph E. Davis,
Lecturer in Education. B.A., Duquesne University; M.A., Kent State University; Ph.D., University of Ottawa

William A. DePalo,
Lieutenant, U.S. Army
Instructor in Military Science. B.S. New Mexico State College

William J. Devlin, S.J.,
Professor and Chairman: Department of Philosophy. A.B., M.A., St. Louis University; S.T.L., Woodstock College; Cand. Ph.D., Fordham University

James A. Dinnan,
Associate Professor of Education and Director of Reading Clinic. B.A., M.S. in Ed., Hofstra College; Ph.D., Fordham University

James T. Doyle,
Assistant Professor of History. B.S., M.A., Cand. Ph.D., Ohio State University

Paul S. Dudzik,
Lecturer in Business Administration. B.S., M.B.A., University of Scranton

John J. Dunstone,
Assistant Professor of Psychology. B.S., Pennsylvania State University, M.S., Ph.D., University of Massachusetts

John L. Earl, III,
Assistant Professor of History. B.S., M.A., Villanova University; Ph.D., Georgetown University

Frank T. Edwards,
Instructor in History. B.A., Antioch College; B.S., M.A., Georgetown University; Cand. Ph.D., The Catholic University of America

Gary E. Eichelsdorfer,
Instructor in Mathematics. B.A., Gannon College; M.A., University of Detroit

Henry J. Erhart, S.J.,
Assistant Professor of Theology. A.B., M.A., Ph.L., Boston College; S.T.B., Woodstock College

Joseph T. Evans,
Professor of Biology. B.S., University of Scranton; M.S., Ph.D., The Catholic University of America

Matthew J. Fairbanks,
Associate Professor of Philosophy. B.S., M.A., Loyola University, Chicago; Ph.D., Notre Dame University

Edward J. Farren, S.J.,
Assistant Professor of Philosophy. A.B., M.A., Ph.L., St. Louis University; S.T.L., Woodstock College

Jerome J. Flynn,
Lecturer in Physics. B.S., M.S., University of Scranton

William J. Frusciante, Jr.,
Captain, U.S. Army
Instructor in Military Science. B.S., University of Scranton

Eugene B. Gallagher, S.J.,
Professor and Chairman: Department of Theology. A.B., Ph.L., M.A., S.T.L., Cand. S.T.D., Woodstock College

Francis J. Gallagher, S.J.,
Associate Professor of History. A.B., M.A., S.T.L., Woodstock College

Edward Gannon, S.J.,
(on leave)
Professor of Philosophy. A.B., Georgetown University; Ph.L., S.T.L., Woodstock College; M.A., Fordham University; Ph.D., University of Louvain

Thomas M. Garrett, S.J.,
(on leave)
Associate Professor of Philosophy. A.B., M.A., Ph.L., Gonzaga College; S.T.B., S.T.L., Weston College; Ph.D., Gregorian University, Rome

William J. Garvey,
Lecturer in Business Administration. A.B., Yale University; LL.B., University of Pennsylvania

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William F. Gavin, S.J.,
Instructor in Mathematics. B.A., Bellarmine College; Ph.L., Loyola Seminary; M.A., Fordham University; S.T.B., Woodstock College

A. John Giunta,
Associate Professor of Economics. B.S. Harpur College, State University of New York; M.A., Ph.D., Syracuse University

Alfred L. Gourdet,
Assistant Professor of Modern Languages. B.A., Military Academy of Venezuela; M.A., Indiana University; Cand. Ph.D., Cornell University

Richard F. Grady, S.J., D. Et U.°,
Professor of English. A.B., St. Joseph's College; M.A., S.T.L., Woodstock College; Ph.D., Gregorian University, Rome

Rev. John J. Green,
Lecturer in Education. M.A., Ph.D., Catholic University of America

John A. Grundman,
Instructor in Philosophy. A.B., John Carroll University; Cand. Ph.D., Georgetown University

Walter Haab,
Associate Professor of Chemistry. B.S., Swiss Federal Institute of Technology; M.S., University of Alberta; Ph.D., University of California

Joseph P. Harper, D. Et U.°,
Professor and Chairman: Department of Physics. B.S., St. Edward's University, Texas; M.A., Ph.D., University of Texas

Maurice I. Hart, Jr.,
Assistant Professor of Chemistry. A.B., Maryknoll College; M.S., Ph.D., Fordham University

Daniel J. Houlihan,
Associate Professor of Business Administration. B.S., University of Scranton; M.S., Columbia University; LL.B., Temple University

Edward G. Jacklin, S.J.,
Professor of Philosophy. A.B., Ph.L., M.A., S.T.L., Woodstock College; Ph.D., Gregorian University, Rome; Ph.D., Fordham University.

Edward A. Jarvis, S.J.,
Associate Professor of Philosophy. B.A., M.A., Ph.L., S.T.L., Woodstock College

Bernard J. Johns,
(on leave)
Instructor in Mathematics. A.B., Wilkes College; M.A., Bucknell University; Cand. Ph.D., University of Illinois

Francis X. Jordan,
Instructor in English. A.B., M.A., University of Scranton; Cand. Ph.D., St. Louis University

John R. Kalafut,
Assistant Professor of Physics. B.S., University of Scranton; M.S., Cand. Ph.D., University of Delaware

Cyril E. Kane,
Lecturer in Education. A.B., University of Scranton; M.A., Bucknell University

William E. Katorkas,
Assistant Professor of Business Administration. B.S., University of Scranton; M.B.A., New York University

Robert T. Kelly,
Lecturer in Business Administration. B.S., M.B.A., University of Scranton

John F. Kenny,
Lecturer in Education. B.S., West Chester State College; M.A., Ed.D., Columbia University

Mrs. Eleanor Krajewski, D. Et U.°,
Lecturer in Modern Languages. A.B., Marywood College; M.S., University of Scranton

Antanas Kucas,
Professor of Modern Languages. M.A., Ph.D., University of Vytautas the Great, Lithuania

Eugene M. Langan,
Lecturer in Education. A.B., M.A., University of Scranton

Zim E. Lawhon,
Colonel, U.S. Army
Professor and Chairman: Department of Military Science. A.B., M.S., Princeton University

Daniel F. Lawler, S.J.,
Assistant Professor of Theology. A.B., Georgetown University; Ph.L., S.T.L., Woodstock College

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Lawrence J. Lennon,
Professor and Chairman: Department of Education and Psychology. A.B., M.S., Ph.D., Pennsylvania State University. Certified Psychologist

Marie T. Lesniak,
Lecturer in English. B.S., Marywood College; M.A., University of Scranton

Robert A. Lodge,
Professor of English. B.S., St. John's University; M.A., New York University; Ph.D., St. Louis University

Donald V. MacDonald,
Professor of Education. A.B., St. Francis Xavier University; B.S., M.S., Ph.D., Cornell University

Francis J. MacEntee, S.J.,
Associate Professor of Biology. B.S., Spring Hill College; M.S., Ph.D., The Catholic University of America

Lawrence A. Mann,
Assistant Professor and Chairman: Department of Classical Languages. A.B., M.A., University of Maine; Cand. Ph.D., Fordham University

Michael Marino,
Associate Professor of Education. B.S., M.S., Brockport State; Ed.D., University of Buffalo

Gerard E. Mayer,
Instructor in History. B.S., Fordham University; M.A., Cand. Ph.D., University of Denver

Eugene A. McGinnis,
Professor of Physics. B.S., University of Scranton; M.S., New York University; Ph.D., Fordham University

Bernard J. McGurl,
Assistant Professor of English. A.B., M.A., University of Scranton

John M. McInerney,
Instructor in English. A.B., LeMoyne College; M.A., Cand. Ph.D., Loyola University, Chicago

John P. McLean, D. Et U.°,
Assistant Professor of Business Administration. B.S., University of Scranton

John P. McNicholas, S.J.,
Associate Professor of Philosophy; Faculty Chairman of Athletics. A.B., M.A., S.T.L., Woodstock College; Ph.D., Gregorian University, Rome

John McVeigh, S.J.,
Instructor in Philosophy. A.B., Ph.L., M.A., Fordham University; S.T.B., Woodstock College

Albert M. Menichello,
Laboratory Assistant, Department of Chemistry. B.S., University of Scranton

Peter D. Migaleddi,
Major, U.S. Army
Assistant Professor of Military Science. B.S., North Carolina State College

Louis D. Mitchell,
Assistant Professor of English. B.A., M.A., Fordham University; Cand. Ph.D., New York University

Francis J. Murray,
Instructor in Physics. B.S., Iona College; M.S., St. John's University; Cand. Ph.D., New York University

John J. Murray,
Associate Professor of English. B.S., University of Scranton; M.A., The Catholic University of America; Ph.D., New York University

William J. Murray,
Lecturer in Mathematics. B.S., M.A., University of Scranton

Anthony F. Musso,
Lecturer in Modern Languages. B.S., M.S., University of Scranton

Cyril P. O'Hora, D. Et U.°,
Lecturer in Mathematics. A.B., University of Scranton

Matthew J. O'Keefe,
Lecturer in Economics. A.B., Holy Cross College

Matthew R. O'Rourke,
Assistant Professor of English. A.B., M.A., Rutgers University

William H. Osterle, S.J.,
Assistant Professor of Theology. A.B., Loyola University of Chicago; Ph.L., West Baden College; M.S. in L.S., Western Reserve University; S.T.B., Woodstock College; M.A., University of Notre Dame

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Richard H. Passon,
Assistant Professor of English. A.B., King's College; M.A., Ph.D., University of Notre Dame

Wanda M. Persichetti,
Lecturer in Modern Languages. A.B., Instituto Superiore Orientale, Naples; M.A., Marywood College; Dottore in M.L., Instituto Universitario Orientale, Naples

Andrew W. Plonsky,
Professor and Chairman: Department of Engineering; Registered Professional Engineer in Pennsylvania. B.S., University of Scranton; B.S.E.E., M.S.E.E., Massachusetts Institute of Technology

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Assistant Professor of Business. B.S., M.B.A., Northeastern University

Edward R. Powers, S.J.,
Associate Professor of Mathematics. A.B., M.A., Boston College; S.T.L., Weston College

John J. Quinn, S.J.,
Assistant Professor of English. A.B., Holy Cross College; Ph.L., Weston College; S.T.B., Woodstock College; M.A., Fordham University

Karl F. Rekas,
Assistant Professor of Education. B.S., M.A., Cand. D.Ed., Pennsylvania State University

William V. Rakauskas,
Lecturer in English. B.S., M.A., University of Scranton

Alfred M. Rotondaro,
Assistant Professor of English. B.S., University of Scranton; M.A., Creighton University; Cand. Ph.D., New York University

Stephen P. Ryan,
Professor and Chairman: Department of English. A.B., St. Joseph's College; M.A., University of Pennsylvania; M.A., Ph.D., University College, Dublin, National University of Ireland

Joseph G. Savulis, D. Et U.°,
Assistant Professor of Mathematics. B.S., University of Scranton; M.A., Fordham University

Anthony S. Scavillo,
Instructor in Modern Languages. B.A., LaSalle College; M.A., Cand. Ph.D., The Catholic University of America

Erika Fuchs Scavillo,
Lecturer in Modern Languages. Staatsexamen, University of Munster

Timothy H. Scully,
Assistant Professor of Political Science. B.S., M.A., Boston College; Cand. Ph.D., Fordham University

Herman L. Senker, D. Et U.°,
Professor and Chairman: Department of Business Administration. B.S. in C., Manhattan College; M.B.A., Harvard University; D.C.S., New York University

Thomas G. Sheehan,
Assistant Professor of Economics. B.S., University of Pennsylvania; M.A., University of Scranton

Harold R. Sherman,
Major, U.S. Army
Assistant Professor of Military Science. B.S., Pennsylvania Military College.

Bernard S. Soika,
Lecturer in Business Administration. B.S., Bloomsburg State College; M.B.A., University of Scranton

Larry D. Stetler,
Lecturer in Business. B.S., Pennsylvania State University

Robert R. Stewart,
Major, U.S. Army
Assistant Professor of Military Science. B.S., U.S. Military Academy, West Point

Harry B. Strickland,
Assistant Professor of Business Administration. B.S., St. Vincent's College; M.L., Cand. Ph.D., University of Pittsburgh

Bernard A. Suppe, S.J.,
Associate Profesor of Philosophy. A.B., Ph.L., St. Louis University; S.T.L., Woodstock College

Charles J. Thoman, S.J.,
Assistant Professor of Chemistry. B.S., Spring Hill College; M.S., Fordham University; S.T.B., Woodstock College; Ph.D., University of Massachusetts

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Charles B. Trundle, S.J.,
Professor of Theology. A.B., M.A., Georgetown University; Ph.L., Woodstock College; S.T.L., Weston College

John J. Viola,
Lecturer in Sociology. B.S., University of Scranton; M.S.S.W., Fordham University

Bernard D. Williams,
Assistant Professor of History. B.A., LaSalle College; M.A., Niagara University; Cand. Ph.D., University of Maryland

John C. Williams,
Instructor in Reading; Assistant Director of Reading Clinic. B.S., Bloomsburg State College; M.S., University of Scranton

Leonard N. Wolf, D. Et U.°,
Professor and Chairman: Department of Biology. B.S., St. Vincent's College; M.S., Ph.D., University of Pittsburgh

Josephine B. Wolfe,
Associate Professor in Reading. B.S., Pennsylvania State University; M.Ed., Temple University; Cand. Ph.D., Columbia University

Doris E. Wyllie,
Lecturer in Education. B.S., Penn State University; M.S., Bucknell University; D.Ed., Pennsylvania State University

Joseph R. Zandarski,
Associate Professor of Business Administration. B.S., University of Scranton; M.B.A., New York University; Ph.D., University of Pittsburgh

Juan Zela-Koort,
Assistant Professor of Modern Languages. B.A., University of Cuzco; Ph.D., University of Munster

GRADUATE TEACHING ASSISTANTS

James R. Carlisle, III,
Graduate Fellow in Business Administration. B.S., Wheeling College; Cand. M.B.A., University of Scranton

Joseph A. Feigo,
Graduate Fellow in Business Administration. B.S., Wilkes College; Cand. M.B.A., University of Scranton

George P. Generas, Jr.,
Graduate Fellow in Business Administration. B.S., University of Scranton; Cand. M.B.A., University of Scranton

John R. Kelleher,
Graduate Fellow in English. A.B., Fordham University; Cand. M.A., University of Scranton

Joseph A. Sobierajski,
Graduate Fellow in English. A.B., Loyola College, Baltimore; Cand. M.A., University of Scranton

Richard F. Synowiec,
Graduate Fellow in Business Administration. B.S., Wheeling College; Cand. M.B.A., University of Scranton

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